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ABSTRACT

This paper describes two uses of the Microsoft Access relational database software in the Wake County (North Carolina) public schools: first, to track data on students involved in the Student Support Team (SST) Process; and second, to handle the legal and procedural due process steps that occur after a student has been suspended from school. The SST process is an interdisciplinary planning process for at-risk students and is composed of professionals in regular education, special education, related services, and community resources, including family members. The database software application allows SST members to access school and central office data files on students and also to record decisions and events in the course of working with each at-risk student. Evaluation indicates that the software applications have greatly facilitated the SST and due process efforts. The software guides users in fast, friendly ways for data entry. Electronic downloads reduce data collection time by importing already known information into the two applications for analysis and manipulation. Paperwork has been reduced while enhancing the quality of data collection and monitoring of students' progress. A variety of reports can be generated on demand. The bulk of this paper consists of examples of input screens, data analysis screens, reports, flow charts, and other forms used in the two programs. (DB)

Software to Help the At-Risk Child's Chances

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OVERVIEW

The Wake County Public School System (WCPSS) in Raleigh, NC has 105 schools with approximately 90,000 students in grades pre-K through 12. The student population has increased by 4000-5000 students each of the past several years, and this rate of growth is expected to continue well into the 21st century. This growth has meant the absorption of an increasingly diverse population for which the school system has many data management needs, especially among at-risk students. One method of keeping track of all the data concerning large numbers of at-risk students is to develop automated processes that support better data-gathering, monitoring, and reporting tools.

In a large system such as WCPSS, federal, state, and local data requirements create the need for electronic storage and retrieval systems that can handle various kinds of data about thousands of students over many years' time. Traditionally, WCPSS' data have been stored and retrieved using an IBM mainframe. However, large, static mainframe storage systems can be cumbersome and fail to meet the needs of a rapidly expanding and changing school system. There is a need for intermediate software applications that are user friendly and immediately available for staff members in the field, which can also can interact with the mainframe to retrieve or record data.

Business and personal computer users have utilized databases for years to track personnel and inventories, but educators have been slower to catch onto this method. The increasing emphasis on accountability, however, has spurred educators' interest in organizing and using data to make decisions. In the WCPSS, the Department of Evaluation and Research (E&R) was established in 1990 to improve program evaluation and school accountability processes. As part of E&R's effort to promote high quality data resources, it has recently worked with two other WCPSS departments to establish user-friendly database software applications.

Early in 1996, the WCPSS E&R and Student Services departments used funding available through an Intervention/Prevention (I/P) grant and developed a software application for tracking data on students involved in the Student Support Team (SST) process. The SST is a multi-disciplinary team operating at the school level and composed of individuals in regular education, special education, related services, and community resources including family members. The focus of the SST is to develop a holistic plan to enhance the success of each at-risk student in the student's most natural and enabling environment with the collaborative support of the team members. The SST emphasizes providing services that strengthen and support the student as the primary strategy, rather than placing students into special kinds of programs as the only strategy (Wright & Covington, 1995). SST members are encouraged to identify numerous and varied possible avenues for helping at-risk students. The SST software application that has been developed is a database that allows SST members to access school and central office data files on students and also record decisions and events in the course of working with each at-risk student (see Attachment #1.a.-l.).

In the summer of 1997, the WCPSS and Student Services departments used local funds to develop another database application project for the WCPSS Office of Student Due Process. The Office of Student Due Process handles the legal and procedural steps that occur after a student has been suspended from school. In the 1996-97 school year, there were 5,980 students involved in 11,461 short-term and long-term suspension incidents. Depending upon the type of suspension, the type of student suspended, whether the student appealed the suspension, and whether alternatives to suspension were offered to the student, dozens of decisions have to be tracked for each case. Moreover, notifications to parents have to be mailed by certain deadlines; and options taken, or not taken, by students within a certain period have to be recorded. Reports to central office as well as to the state Department of Public Instruction are required. In addition, greater efforts to apply for grant funding require more ad hoc analyses of suspension data, answering such questions as how many suspensions were alcohol-related. The Due Process software application that has been developed allows WCPSS Central Office personnel to record a greater quantity of student data with improved accuracy, retrieve these data efficiently, and analyze these data in new ways.

What is a Relational Database?

The WCPSS SST and Due Process software applications' database tables were designed to work with the Access relational database software in the Microsoft Office suite. A relational database is a computerized record-keeping system that provides a certain way of viewing data. C. J. Date (1983) indicates there are three aspects of the relational model: data structure, data integrity, and data manipulation.

Data structure refers to how the data should be represented, or allocated on a non-volatile storage media. Tables with rows and columns define the typical database structure with a row of column headings that specify the variable values in each column. A **table** represents a real-world entity or concept such as a set of students. A **column** of a table refers to a specific attribute, while a **row** of a table represents an instance of data. For example, all student last names could be stored in a 'Last Name' column. Each student, with all of his or her attributes, are contained in a row. Finally, for each specified column, there is exactly one data value in each row. For example, a column labeled Student ID cannot have two IDs in any one row.

Data integrity depends upon unique identifiers. Every table should have a unique identifier key, either primary or foreign. A **primary key** is a table field (column) or combination of fields that uniquely identifies the records in that table. In other words, a column may be defined as a 'Primary Key' to convey that each row must contain a unique value to refer to that row. 'Student ID' or 'SSN' are typical examples of primary keys. A **foreign key** is a field or fields whose values match those of the primary key in another table.

Data manipulation is essentially a "cut-and-paste" process. When retrieving data from one or more tables, the result is another table composed of parts of the original tables, "pasted" together in some organized way. Data manipulation is essentially the engine that drives the process. It is the act of drawing information from a structured storage and placing it into an interface. The primary data manipulation in the SST system pulls the data from a laptop's hard disk and presents it on the screen. Another typical outcome of data manipulation is reporting, to draw historical information, summarize it, and present the compiled information on paper or on screen. The most common form of requesting data is via a structured query language referred to as SQL. Both the SST system and the Due Process system use the SQL language to allow for moving either system to a different type of computer. Since SQL is designed to work on most platforms, it allows a system to grow. Allowing for growth is referred to as the system's scalability.

THE STUDENT SUPPORT TEAM PROJECT

Introduction

SST meetings generally take place at school sites once a week for approximately 45 minutes. One goal of the SST software development was to support, but not interfere with, the SST meeting. Ideally, the software should contribute to an efficient and effective SST meeting. Consequently, a decision was made to have the software designed as the structural centerpiece for the SST meeting, mimicking the meeting flow through each domain that the team covers. The SST effort is a holistic approach covering any, or all, of nine "life" areas. Information on a student can come from the educational setting, as well as medical, legal, family, psychological, and social settings, among others. In the days before the SST software, with as many as a dozen SST members attending a meeting, each of whom might be scribbling notes, there was no cohesive method to capture in a single place the content of the meeting. Also, any educational data that might be brought to the meeting would have been collected from a variety of places, including the student's cumulative folder. Additionally, monitoring the student's progress in the days following an SST meeting was not always done in a timely manner. There was no formal reporting of an individual student's case to the parent, and no summary report about the SST involvement in the case. Neither was there any systematic evaluation of the intervention strategies used or of which strategies had proven effective. Now, with the SST software, the data which underlie all of these and other functions are recorded and organized in real time during the meeting or as new information is learned.

Exploring Software Options

In January 1996, a committee of central office and school personnel established the criteria necessary for the kind of software needed for a successful systemwide Intervention/Prevention Program (I/P) implementation. In February 1996, initial consideration was given to the purchase of an existing software application. However, the three packages reviewed were deemed costly, initially ranging from $12,000 to $24,000. Additional costs would be incurred if any changes were made to the application to fit the I/P project. A final disadvantage of the commercially available software was that no package was specifically designed to enhance school-based SST processes nor its data gathering and reporting activities. Consequently, committee members decided to hire their own applications developer to design a product to fit the needs of Wake County Public Schools.

Contracting Software Development & Training

A software developer was found after consultation with Productivity Point International (PPI), a Chicago-based firm with a branch in Raleigh. In April 1996, the developer presented a quote of $8,000 for the project, which was accepted; and a contract was signed for the development of the software prototype. By August, the individual responsible for the project had left PPI to start his own software consulting business, Eagle Vision Consulting. This person negotiated with PPI to keep the SST project with him, and Eagle Vision was contracted in November to provide training and materials for 19 WCPSS schools. In December 1996, the software was released during SST training sessions to six elementary, ten middle, and three high schools. Eagle Vision also assisted in the February 1997 training for three of WCPSS' alternative schools. In August 1997, another contract was negotiated with Eagle Vision, designating $11,400 for software development, $4,000 for manual development, $4,000 for 125 manuals and software CDs, and $9000 for training. Training and software were provided for all WCPSS schools from December 1997 through April 1998. Finally, development of software version number 5.0 with 20 manuals and CDs was contracted in March 1998 for $15,460. Funding for WCPSS' I/P program derives from federal and state sources, and these grant funds have been crucial to the cyclical development of this project.

Software Development & Review

Software development is iterative improvement process, requiring a "completed" project that users then beta-test, or field-test. Comments from the field test are then incorporated into the final version for that contracted phase of the development of the software. The SST software was field-tested in one school in May 1996. Additionally, two central administrators reviewed the software. User feedback created several pages of issues ranging from interface and data issues to "bugs and bombs." In April 1997, a user feedback session was scheduled with Eagle Vision. Several schools were represented as well as I/P and E&R staff. This session was a screen-by-screen review of the software. Field testing allowed the personnel involved in development to better understand user needs. WCPSS staff members had never before been so involved in the development of a system wide software application. Therefore, each step was new territory, and each school's experience was seen as important to the project's success.

Providing Hardware

In order to provide each school the best experience with the project, grant funds were used to purchase laptop computers and laser or inkjet printers. Each school received one laptop with Microsoft Office and anti-virus software along with one printer. Schools were required to attend SST training to receive their hardware. Providing hardware was essential to the use of the software since many schools only had old, donated computers and few, if any, printers. Laptops were selected instead of desktops because of the migratory nature of SST meetings. Meetings are held wherever space is available and usually for less than an hour, therefore desktop computers would have been too inconvenient to transport to these meetings. Printers were purchased because the software was designed to print reports on demand to provide team members with details of the SST cases.

Standardizing and Issuing Reports

Previous data collection/reporting procedures had each SST member taking their own informal notes, resulting in confusion about what had been decided and who was to take which action. Standardizing data collection and reporting procedures allows SST members to all "be on the same page" with regard to the discussions and decisions made during the SST meeting. Additionally, parents, an important presence in

all SST meetings, could take home a Student Profile report (see Attachment #2) for review. The Profile provides a comprehensive review of the issues surrounding the at-risk student in several life areas. This report is consistent with a systems theory approach that recognizes that the student should be viewed holistically. SST members could also print out the Action Plan (see Attachment #3), detailing the concerns, objectives, and strategies of a student's case. For an accurate record of the SST meetings, the Case Log report (see Attachment #4) shows each meeting date, attendees, student being discussed, and topics of the discussion. Finally, a Team Summary report (see Attachment #5) provides percentage summaries for demographic and other case-related data. The usefulness of these four reports, and thus the effectiveness of the SST, is dependent upon the integrity of the collected data.

Obtaining Good Data

Data integrity was one the of the most important design issues. Eagle Vision met with the I/P Coordinator and the E&R Data Analyst to discuss data issues. These discussions centered on what data would be needed for an SST to make effective decisions about its at-risk students. It was determined that some data could be obtained from the school system's mainframe computer. The mainframe is host to data such as student demographics, suspensions, grades, registration histories, and testing results. The E&R Data Analyst worked with the WCPSS Student Information Manager to establish a procedure so that each school could call in a request to Information Systems for data. The individual making the request would specify the program name (e.g. SIST0180), school number, and level of data (i.e. individual, grade, or school). Because some of the data are considered confidential, it was necessary to establish that the data disk would be picked up in person instead of sent through courier. Future data transmissions will occur electronically by remote log-ins to the central office network server. Steps are currently under way to provide schools with remote modem transfers. Within two years, all schools will be hooked to the WCPSS wide-area network (WAN), and data transmissions will be available through a drag-and-drop method. Data security measures will play an important role in the design of future data transmission protocols. Retrieving and importing already available student information into the SST software in a secure fashion is important to protecting student confidentiality, maintaining data integrity, and saving time for all involved.

Another data design issue included allowing for free-form text boxes for elaboration. These text boxes can be accessed on each screen or together on the Summary screen. The text is linked from each individual screen to its corresponding box on the Summary screen. Any changes that occur in one box will also appear in the other. The Summary screen allows an SST recorder to type all information on the same screen without switching among screens. Flexible use of entering information was essential to ensure that good information would be captured.

To further save data keying, drop-down boxes were designed for several screens. These boxes provide point-and-click options to fill in information rather than typing the information. More sophisticated drop-down boxes such as those on the Request and the Action Plan screens provide a drop-down list that is dependent upon a selection made from a previous drop-down list. For example, a selection from the Categories box on the Request screen will determine which list of specific concerns shows in the Concerns box. Likewise, on the Action Plan screen, the Strategy Code chosen will determine which list of specific activities will appear in the Activities box (See Attachments #6.a.-d.). In order to determine which SST strategies were most often used and which were most useful, the Action Plan screen provides drop-down boxes for the SST to report the effectiveness of a strategy and a box to determine the method of assessment for each strategy (See Attachments #7.a.-b.).

The ability to collect data via the SST software and the standardization of certain data fields have implications for the evaluation of SST itself. Because of its funding origins, the SSTs must undergo a program evaluation to determine if the program is effective in its support of at-risk students. This evaluation is coordinated through the E&R department. The first evaluation occurred in the 1996-97 school year. The data for all SST cases in the district were captured using two bubble sheet surveys, one in February, and the other in May 1997. Much of the bubble survey data collection is redundant with the data collection effort already sustained in the SST software. One of the enhancements to version 5.0 will be to incorporate data collection points that mirror the bubble sheet surveys. The software can then provide an exportable ASCII data set from each school to be sent to the E&R SST evaluator. Just as the paper surveys had Likert-scale and other standardized answer options, so will the SST software.

Another strategy to reduce redundant efforts and maintain data consistency is to allow a student's SST data to transfer with the student to another school in the district. An export/import feature allows an SST to review a newly transferred student's case that was initiated at another school. Staff members at the new school will be able to quickly learn what strategies have already been used and how effective they were.

Finally, a reminder to back-up the school's SST data pops up every month when the software is opened. The message persists until the backup is performed. In the interest of disk space, the backup saves only the SST data and not the data that is downloaded from the mainframe server.

Database Design

The I/P coordinator, the E&R Data Analyst, and Eagle Vision consultant collaborated to design the SST database. There are nine tables in the database: Students, Download, System Log, Suspensions, History, Resources, School History, Family Involvement, and Grade History. For a list of the corresponding fields, see Attachment #8. The main table is the Students table. While tables usually take on the characteristic of being narrow, the Students table is wide; the advantage of which is that response time is quicker when using the software. Conversely, chopping up the Students table into smaller tables would increase the time to load and unload each screen request. A software application that changes screens too slowly will introduce unwanted delays in the SST meeting and disrupt the flow of the meeting.

Eight of the nine tables are "related," and most of the relationships are defined as "one-to-many." One-to-many means that one record entry in one table is related to many record entries in another table. For example, an individual student could have many suspension entries in the Suspensions table that all link to that one student in the Students table. A common field in each of the tables links all the SST tables. That field is Student_ID, which is the primary key in the Students table and the foreign key in the other, related tables. When striving for data integrity in a relational database system, it is most important that each primary key has a unique, non-null value. In this case, that means there must be a unique, non-null value for every instance if Student ID in the Students table.

Benefits Review

There are several data gathering, monitoring, and reporting benefits to using a database application for the SST project:

- The software is designed as a structural centerpiece around which the SST meeting can flow, providing enough flexibility to be used as a recording, as well as a decision-making, tool.
- Data are stored in a central location. No longer is it necessary for the SST members to spend inordinate amounts of time locating a student's educational records, which can be stored in a variety of places across the district.
- Information is gathered in a systematic way that is consistent with a systems theory model. This holistic approach is designed into the software so that SST members can cover all pertinent areas without inadvertently skipping a topic.
- Data retrieval is fast and convenient. Previous methods relied upon the translation of someone's meeting notes, and these might, or might not, be distributed at the next meeting. With the SST software, everyone's contribution can be viewed on-screen. The information needed to monitor an SST case no longer solely resides with team members, who might be absent in subsequent meetings.
- Standardized reports can be generated on the spot to assist in reminding participants about what was covered in the meeting and what actions are to be taken by whom and by what date.
- SST data will be exportable for evaluation of the program's effectiveness. No redundant data collection process will be needed.

THE OFFICE of STUDENT DUE PROCESS PROJECT

Introduction

In the case of student suspensions and due process procedures, there was a need to improve the accuracy and efficiency of data collection and reporting processes. As many as 100 suspension forms on individual students arrive daily by courier at the Central Office. In the past, before the Due Process software, these handwritten forms were keypunched into the mainframe. Because of space limitations on the mainframe, data entry onto the mainframe permitted only the last action on a student to be stored, which often required overwriting the previous action and introduced additional error. Overwriting previous actions essentially erased the historical due process record of the student. In addition, because of space limitations on the mainframe, many pieces of data were maintained manually. For instance, as a student exercised various due process options, the tracking of each step was recorded and filed using several notebooks and a large filing cabinet. Each case had to be manually reviewed to see if any deadlines had passed for activities such as notification of appeals deadlines. In addition, because data maintenance was so labor intensive, there was minimal use of codes to differentiate variables such as types of suspensions. For example, all drug-related suspensions were given the same code number. This code would allow for drug-related suspensions to be counted in general but not suspensions by the type of drug, thus limiting the value of the data for reporting and analysis purposes. All formal reports were generated from the mainframe through requests to Information Systems, and it sometimes took weeks to get a report because of backlogs in the Information Systems Department.

With the Due Process software, the data that track the history of events pertaining to a suspension are recorded and organized by the software. Demographic data about a student on the mainframe are downloaded and imported into the software, and in turn, data about suspensions are periodically uploaded to the mainframe for archiving. The Due Process software is currently used only at the Central Office, and personnel in the schools continue to access the mainframe for suspension data on specific students. At the Central Office, reports about all suspensions and a log of suspension cases can be generated directly from the software. There is a considerable saving in time and improvement in accuracy.

Contractor Considerations

Recognizing the increasing data needs regarding student suspensions, and given the successful experience with the SST software development, the E&R department decided to help standardize data collection, monitoring, and reporting for student suspensions. Two members of the E&R staff, the Evaluation Specialist responsible for collecting school violence data and the Data Analyst were assigned to this project. The Evaluation Specialist was able to provide details concerning the disciplinary process in the school system, often acting as a bridge between the Due Process staff and the E&R staff. The Data Analyst also played a bridging role, working towards an understanding for all parties of hardware requirements and data management issues. Because of the previous experience with the SST project, a decision was made to rehire Eagle Vision. The main advantage of staying with the same company was its familiarity with WCPSS, its data, personnel, and organizational processes.

Software Planning & Development

The Due Process software development had three phases. In the first phase, WCPSS E&R personnel met with Due Process personnel, and subsequently with Eagle Vision personnel in the spring of 1997 to discuss software needs. After a series of meetings, Eagle Vision submitted a proposal for a contract to "*...thoroughly analyze, document, and optimize all business processes related to tracking student suspensions.*" The E&R Department required that the data model be created and delivered as a Microsoft Access database. The goal was to have an operational software package in time for the opening of school in the fall of 1997. In this initial contract proposal, Eagle Vision also described a second phase, which would be to "*...develop a user interface to access the suspension tracking database.*" A third phase was envisioned to allow documents to be "*...stored on a magnetic medium...transferred to a permanent storage medium...indexed to allow retrieval by student and document type (and) printed.*" A contract for the first phase was signed for $8,100, providing 90 man-hours of consultation at $90/hour.

The first phase largely consisted of a series of meetings to identify the data that were necessary to collect in order to track completely the many aspects pertaining to the events of a suspension and appeals process. It was also necessary to identify what data would be collected from the mainframe to supplement student suspension data. As these meetings unfolded, the Eagle Vision consultant constructed the database model. One of the objectives in developing the database model was to reduce data errors by eliminating the practice of overwriting previously entered data. In essence, each event--from the initial documentation of a suspension through the various levels of appeals or types of decisions about alternatives--became a point in time when specific pieces of data needed to be captured. In order to build a software system that captured each aspect of the student due processes, a process specification was created. The specification consisted of several flow charts, detailing every option at each step in the process (see Attachment #9). One consequence of this approach is that the Due Process database ultimately consisted of 14 tables, about 50% more than does the SST database (see Attachment #10). The main table is the Suspension table. Most of the other tables have a one-to-many relationship with the Suspension table. At the conclusion of this initial phase, the E&R Department arranged with the Eagle Vision contractor to showcase the database to other school administrators--those who could make decisions about continuing development activities in subsequent phases. At this time, the database had minimal graphical user interface capabilities. Even so, the demonstration of the software was sufficient to impress school administrators with its power and potential for further development, and a second phase of development was initiated.

Because the 1997-98 school year had already started, there was no opportunity for "field-testing" the software, and the model that was developed in the initial phase was implemented in the fall of 1997. In its original form, the second phase contract with Eagle Vision was for a total of 75 hours ($6,750 at $90/hour). Activities in the second phase were intended to address two objectives--the interface with the mainframe and enhancements to the graphical user interface. Mainframe complications developed chiefly pertaining to downloading student demographic data from the mainframe and importing it into the Due Process software application, as well as uploading student suspension data back to the mainframe. Unlike the SST software, the Due Process software requires a two-way interaction with the mainframe. The downloads serve to insert new student IDs and to change addresses in the Due Process software. The uploads serve to archive the latest suspension information onto the mainframe. Without the opportunity for field-testing, there were software, hardware, and data issues that were unforeseen. Additionally, there were personnel turnovers in the Information Systems department as well as the Office of Student Due Process that further complicated development. Also at this time, the Due Process office needed to upgrade its computer to work with the WCPSS WAN for faster mainframe transfers. Collectively, the WCPSS E&R Data Analyst, Due Process, and Information Systems persons, along with the Eagle Vision contractor, were able to resolve download and upload complications and make the necessary hardware and software upgrades. However, these activities used up many hours in the second phase, and an amendment was written to the second contract which provided for an additional 17.5 hours of consultation ($1,575 at the same hourly rate). By the end of the second phase, the Due Process software was fully functional with graphical enhancements (see Attachments #11.a.-h.).

As noted above, one vision that served to guide the software development activities throughout the different phases was that the software would improve data accuracy and efficiency. With the software operational, and download/upload complications resolved, data accuracy was much improved. Presently, there are only a few situations when data on the software might be changed, and these instances can be cross-referenced with other fields to maintain consistency with the correction, thereby reducing the likelihood of error. Additionally, the contractor designed the Access database to track all instances of when data are changed and to provide a history of these instances by individual student. The software also keeps track of the date of each download of demographic data and each upload of suspension data. In the third phase of development activities, it was possible to turn our attention to making improvements in efficiency.

WCPSS contracted for a total of 55 hours ($4,950) in phase three with 15 of these hours reserved for follow-up consultation. The contractor required WCPSS to set aside those 15 hours so that he could be available to the school system after all development activities were completed. The other 40 hours on the contract were allotted to training WCPSS users, automating a number of standardized reports, and writing a manual for the software. At the point in time that this paper is being written, the third phase is nearing completion, and one of the last activities will be another showcase demonstration. The principle

participants in development of this software are hopeful that development activities may be continued, if not this school year, then next. One improvement would be to allow personnel in the schools to transmit the student suspension form (see Attachment #12) data electronically to the Due Process office. The data can then be verified for accuracy and imported into the database with little, if any, keying required. Additional enhancements to increase the efficiency of the Due Process staff may include date-sensitive pop-up reminders. These reminders would provide a list of which students need what actions taken in their respective cases. Essentially, the benefit would be a computer-generated list of actions to be taken to meet case deadlines instead of a manually generated list. Finally, automated letter generation would create the appropriate form letter with a student's data already inserted but allowing for manual additions or corrections. Such form letters are currently generated manually for each case, and there could be considerable time saving with a push-button method. In all, accuracy of the data will be further improved; efficiency, even more improved.

To date, the total cost of Due Process project has been $21,375, entirely in local funds. This project may appear to be a rather costly endeavor; however, the alternative for improvements in the Due Process procedures would have been to wait for a network application to be developed. In fact, Information Systems advised E&R to wait instead of going ahead with an independently developed project. However, there was much work to be accomplished by the I.S. department before the needs of Due Process would have been addressed. E&R and Due Process decided to have better data gathering, monitoring, and reporting tools now instead of at some indefinite time in the future. Of course, as WCPSS' networking technology continues to develop, some of the processes that are now being handled with the Due Process software may someday rest with the network. The experience with the Due Process software project could greatly economize the adaptation of parts of this software to the WCPSS network.

Providing Hardware & Software Upgrades

In order to accommodate the Due Process project needs, recommendations were made for the upgrade of the Office of Student Due Process' Pentium computer. A 2.5 Gb hard drive, 40 Mb of RAM, an external 1 Gb JAZ drive, Windows 95, and Office 97 were installed. In addition, a TCP/IP connection to the WCPSS wide area network and communications software were installed to allow data transfers between the Due Process PC and the WCPSS mainframe. The TCP/IP connection greatly enhanced data transmission speed for downloads. The previously installed mainframe coaxial cable connection allowed the demographic data download of all students in the WCPSS to finish in about one hour. The TCP/IP connection reduced download time to less than three minutes. The JAZ drive, a removable cartridge drive with hard-drive-like speed and capacity, is used for backups. With the suspensions database currently between 100-200 Mb in size, and increasing as the student population grows, the JAZ drive easily satisfies the need for a large capacity backup system. Access 97, a component of Office 97, is needed for any ad hoc suspension analyses, which can be created in the Access query, form, and report objects. However, the Due Process software can generate two reports of its own.

Reports

Two reports are currently generated from the Due Process software, the Suspension Log and the Student History. The Suspension Log (see Attachment #13) creates a list of all long-term suspensions between user-defined dates. For example, putting in the dates for the beginning of the school year and the end of the school year will generate a list of all long-term suspensions in WCPSS for that school year. Long-term suspensions carry with them options for appeal as well as alternative and temporary placements. Appeals can be made at the school level where the Multi-Disciplinary Team reviews the case, at the central administration level with the Disciplinary Review Committee, or at the school board level. Alternative placement options such as a student-parent drug rehab program or an alternative school setting provide staff with other avenues of recourse in some instances rather than issuing a long-term suspension. These and other options have to be tracked on a weekly, if not daily, basis to ensure that students' rights are protected during the course of their appeals process. The Suspension Log makes that tracking possible. It also allows long-term suspensions to be sorted by any of the columns in the log. For example, the table could be sorted by school or by type of suspension. These resorted logs can also be printed.

The Student History report (see Attachment #14) serves as a historical guide for the Student Due Process Officer. The report outlines all the suspensions that a particular student has received. When a case is in review, it is sometimes helpful to know what previous incidents have occurred and what actions have been taken pertaining to a student. Knowing a student's history helps to guide committee recommendations for actions to be taken in a current case. For some cases, such as those involving theft or vandalism, assault, or weapons possession, a second violation results in an automatic recommendation for long-term suspension. Having a student's due process history is vital during review.

Benefits Review

The purpose of developing the Due Process software was to improve the accuracy and efficiency of maintaining student suspension data. Those improvements help to ensure a fair recording and/or review of a student's case. Following are some of the benefits of the Due Process system:

- More data can now be tracked than could before when solely using the mainframe. Also, data are not overwritten; and therefore, a complete historical account of cases is now available.
- Data entry speed has improved over the previously used mainframe terminal, data entry method. A user-friendly data entry screen was designed with shortcuts and other entry features to accommodate speed, while not sacrificing quality. An example is automatic tabbing to the next data field once the previous field has been filled. Another important feature is the logical navigation of the data screens created from the flow-charted process specifications.
- One software tool is all that is needed to manage the office's processes and data, as opposed to several spreadsheets, manuals, and files.
- Suspension data can now be examined in more meaningful and immediate ways. Previous analyses had to be tabulated by hand or requested from a backlogged I.S. department.

DOCUMENTATION & HELP

Both projects have a help manual. The SST software has extensive on-line help as well. One reason that documentation is a necessary part of software development is staff turnover. Schools have relatively high teacher turnover rates, and user training needs can never be fully met. New staff members can shorten their learning curve by using detailed documentation. WCPSS was particularly sensitive to this issue because of the turnover of three central staff positions during the SST and Due Process projects. Existing documentation of their roles and contributions proved helpful to project completion.

SOFTWARE INDEPENDENCE & AD HOC ANALYSES

The SST and Due Process applications are both written and compiled using Visual Basic. They execute on their own without needing any other software application except for the Windows 95 operating system. Their underlying database tables are built with Microsoft Access. Creating the data tables in Access allows analyses beyond the scope of the applications to be performed, if needed. An understanding of the applications' database structures and the general principles of relational databases is necessary before doing analyses in Access.

CONCLUSIONS

The real-time automation of data gathering, monitoring, and reporting through these software applications has greatly facilitated the SST and Due Process efforts. The software applications help to guide the users in fast, friendly ways for data entry. Electronic downloads from the mainframe reduce data collection time. This reduction is achieved by importing already known information into the two applications where the data can be quickly analyzed (in the case of the SST software) and/or manipulated (in the case of the Due Process software). Paperwork has been reduced while enhancing the quality of data collection and monitoring of students' progress. A variety of reports can be generated on demand.

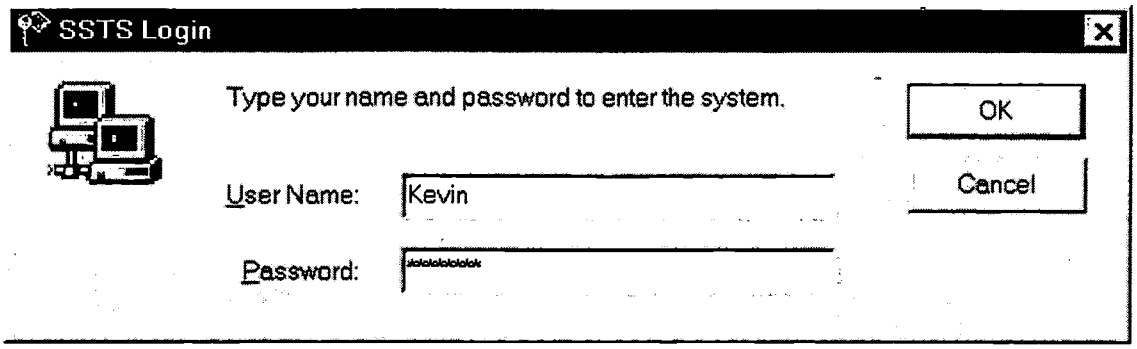
Diverse student needs can challenge a school or Central Office by requiring information to be gathered from a variety of sources. If relevant information cannot be efficiently collected and/or is unreliable, then decisions concerning individual students will be of poor quality. The quality of decisions for students is arguably most important for the at-risk student for whom there is little room for error. Creating structured, automated data-gathering, monitoring, and reporting processes provides guidance to schools, students, and parents about the next most important step in the at-risk student's life.

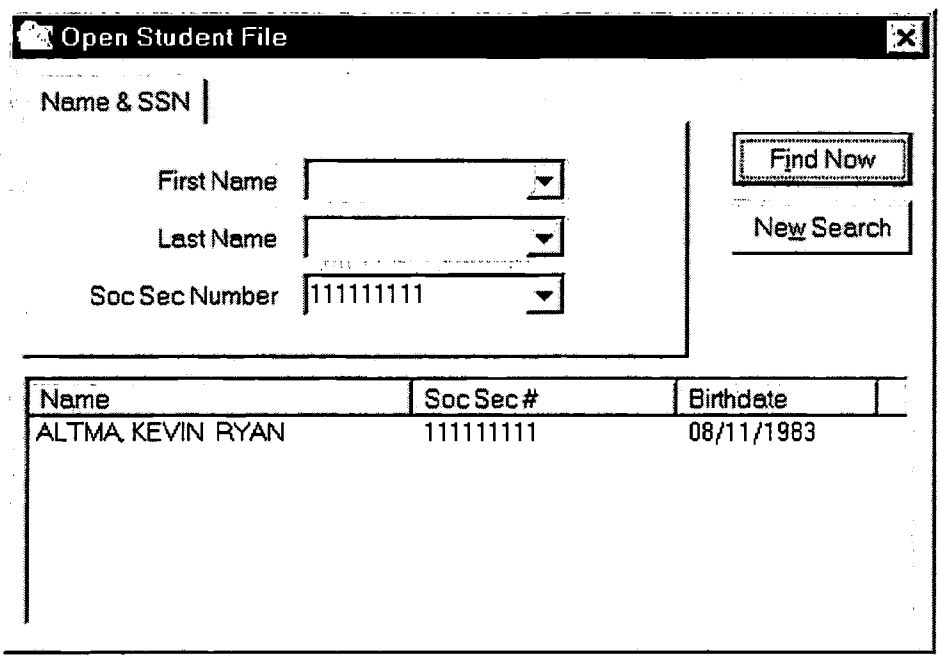
REFERENCES

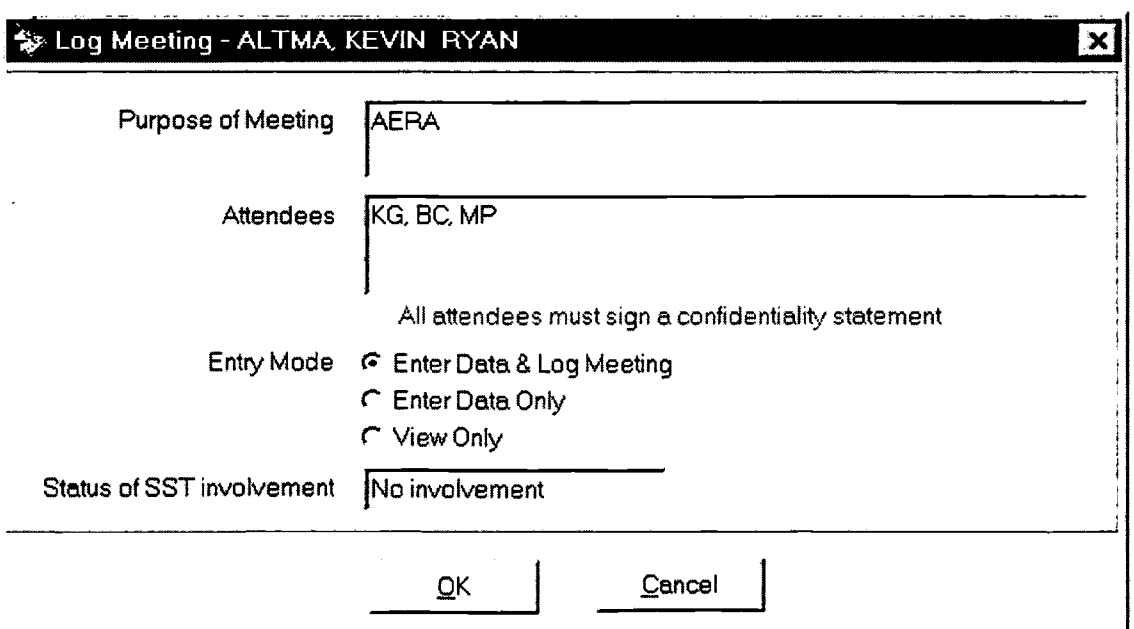
Date, C. J. (1983). Database: A primer. Addison-Wesley Publishing Company.

Wright, S., & Covington, R. O. (1995). A guide to strong student support teams. Raleigh, NC: Wake County Public School System.

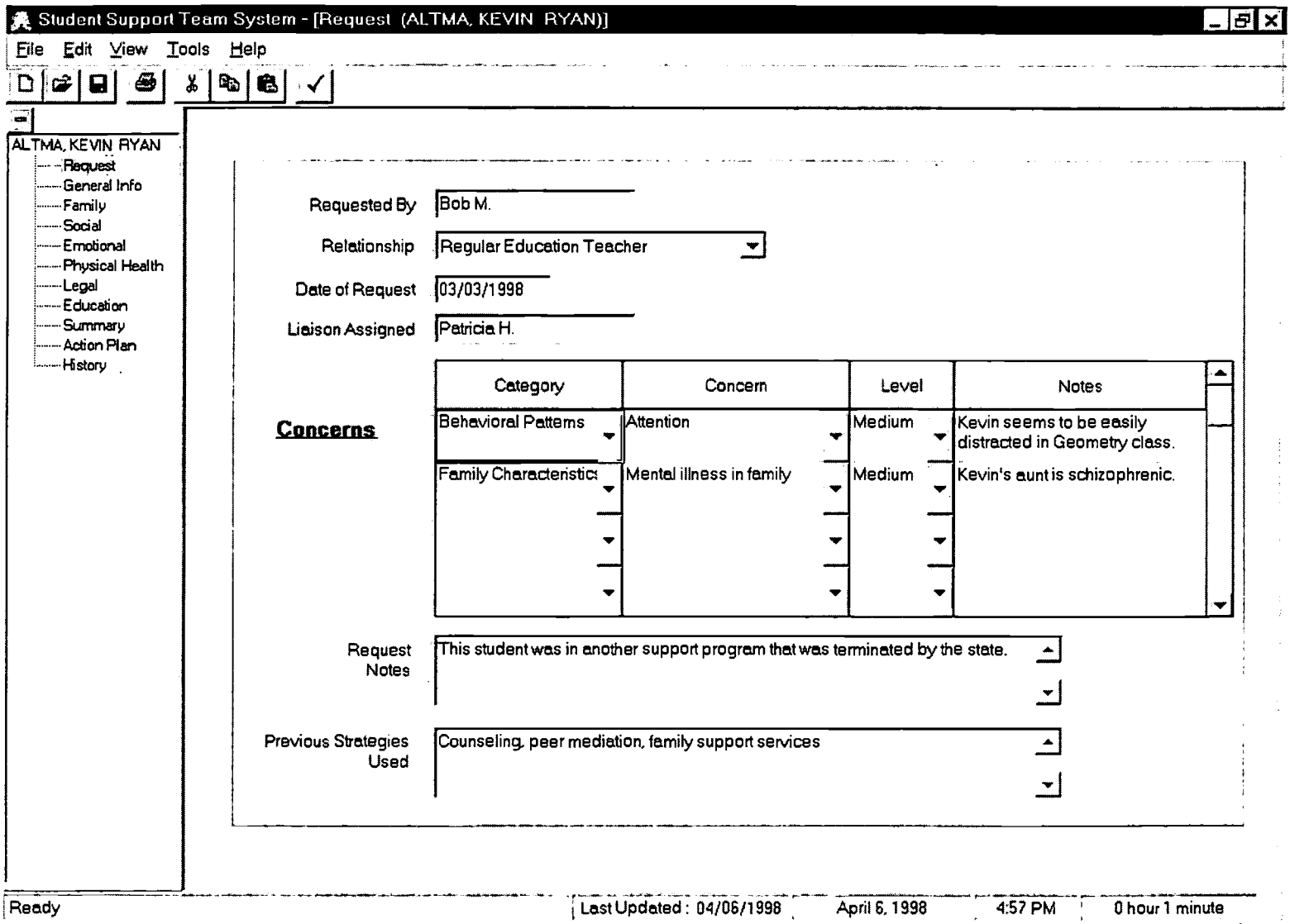
12


SSTS Login
Type your name and password to enter the system.
OK
Cancel
User Name:
Kevin
Password:


Open Student File
Name & SSN
First Name
Last Name
Soc Sec Number
111111111
Find Now
New Search
Name
Soc Sec #
Birthdate
ALTMA, KEVIN RYAN
111111111
08/11/1983


Log Meeting - ALTMA, KEVIN RYAN
Purpose of Meeting
AERA
Attendees
KG, BC, MP
All attendees must sign a confidentiality statement
Entry Mode
Enter Data & Log Meeting
Enter Data Only
View Only
Status of SST involvement
No involvement
OK
Cancel

Attachment # 1.b.



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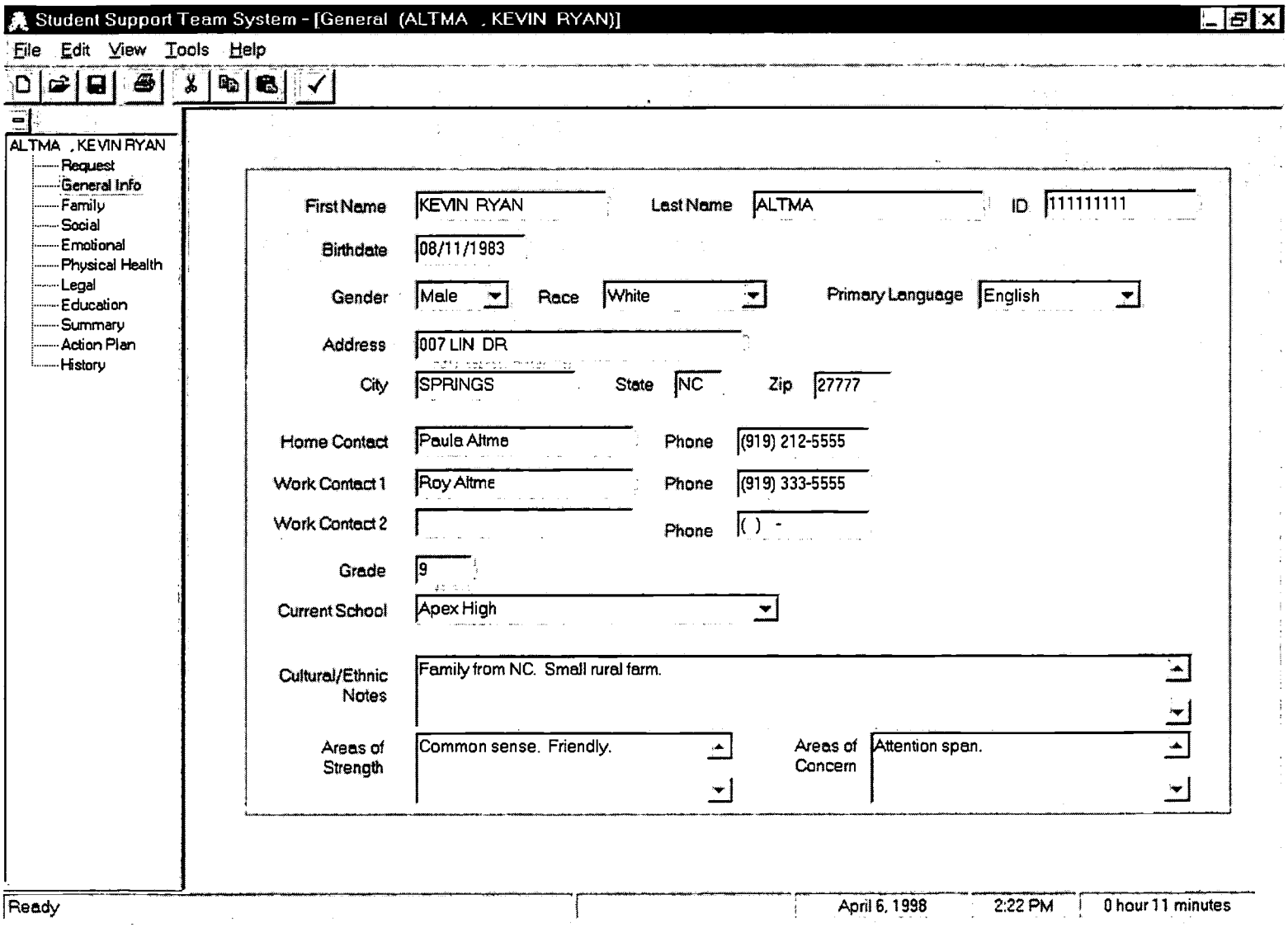

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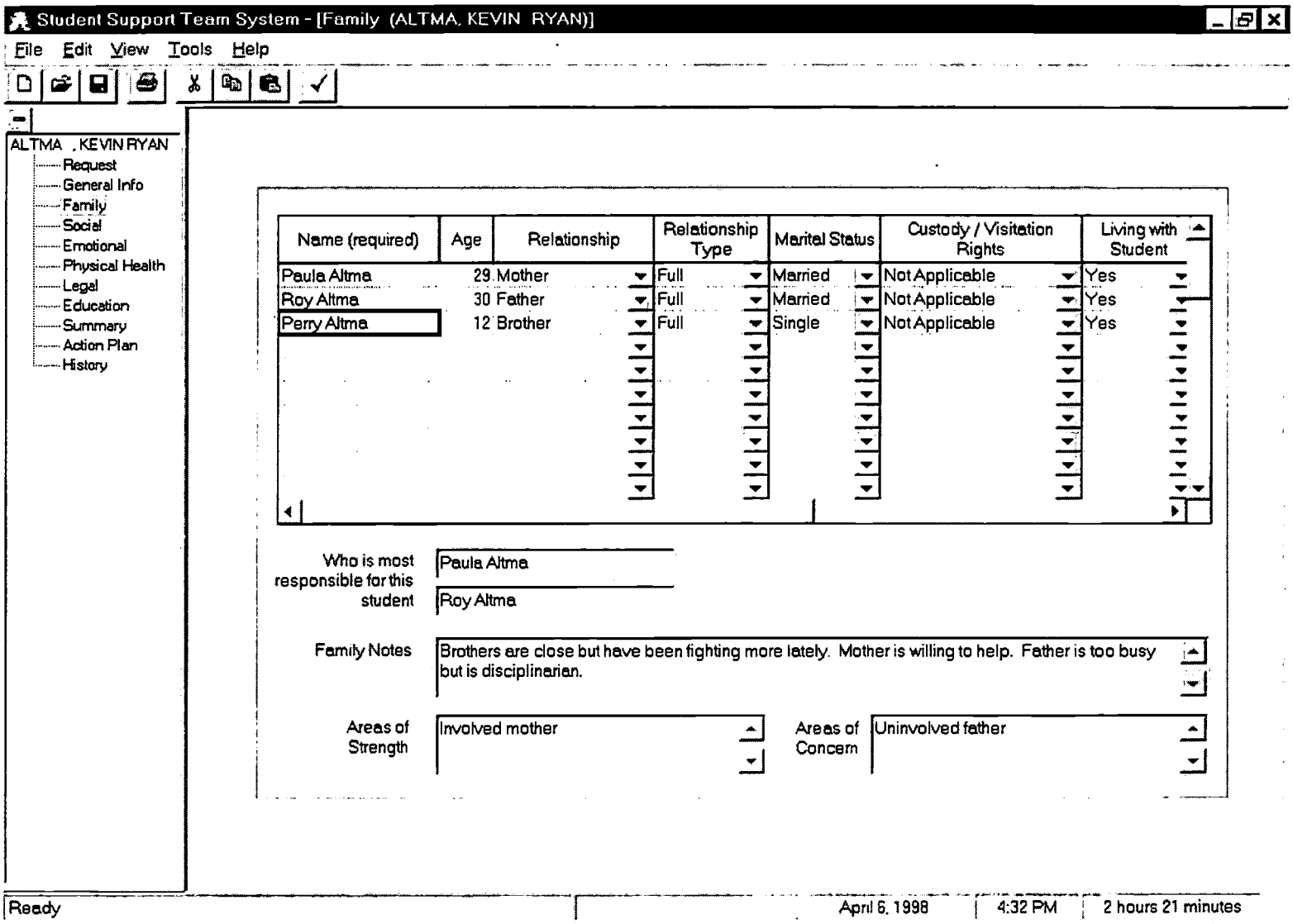

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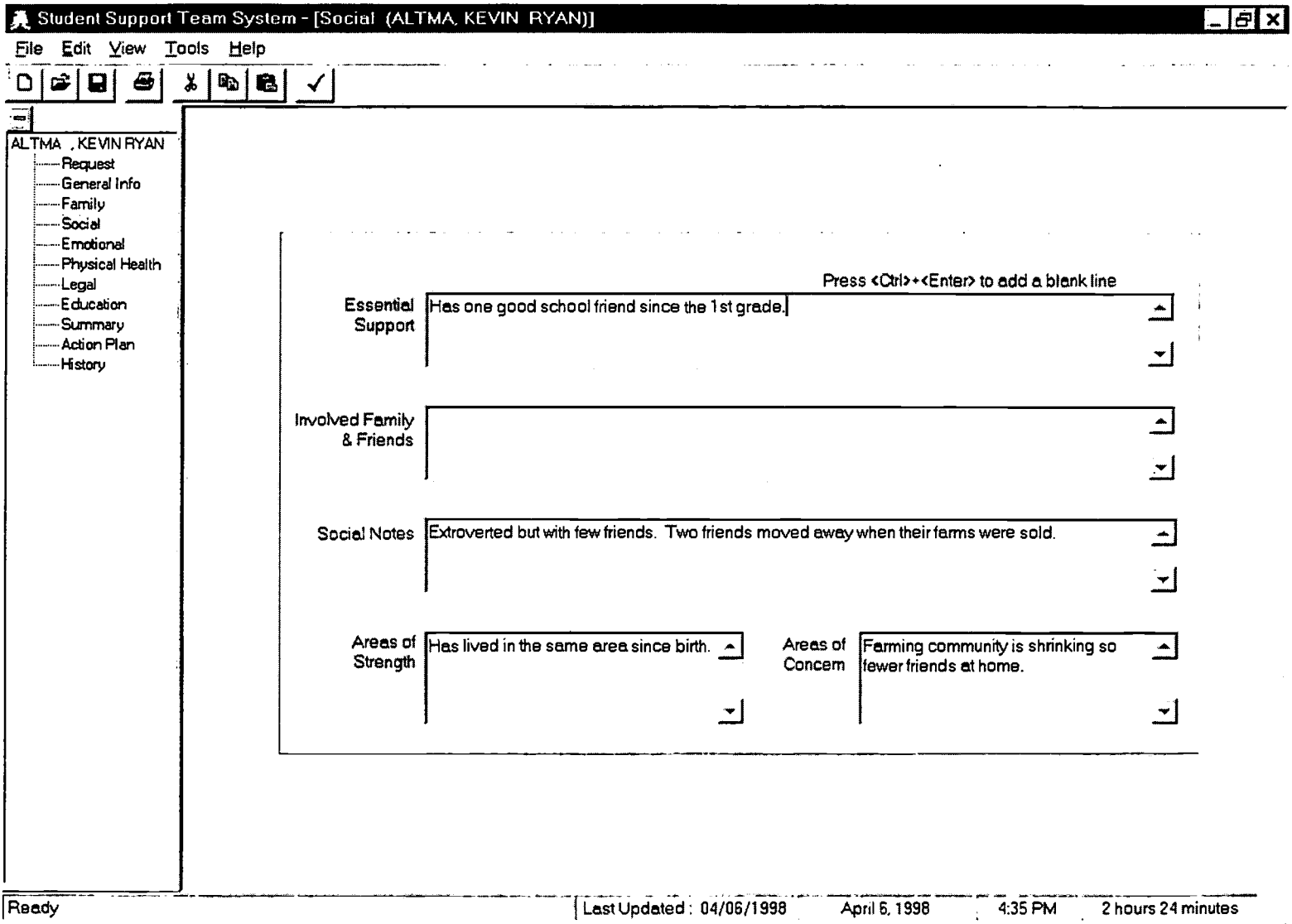

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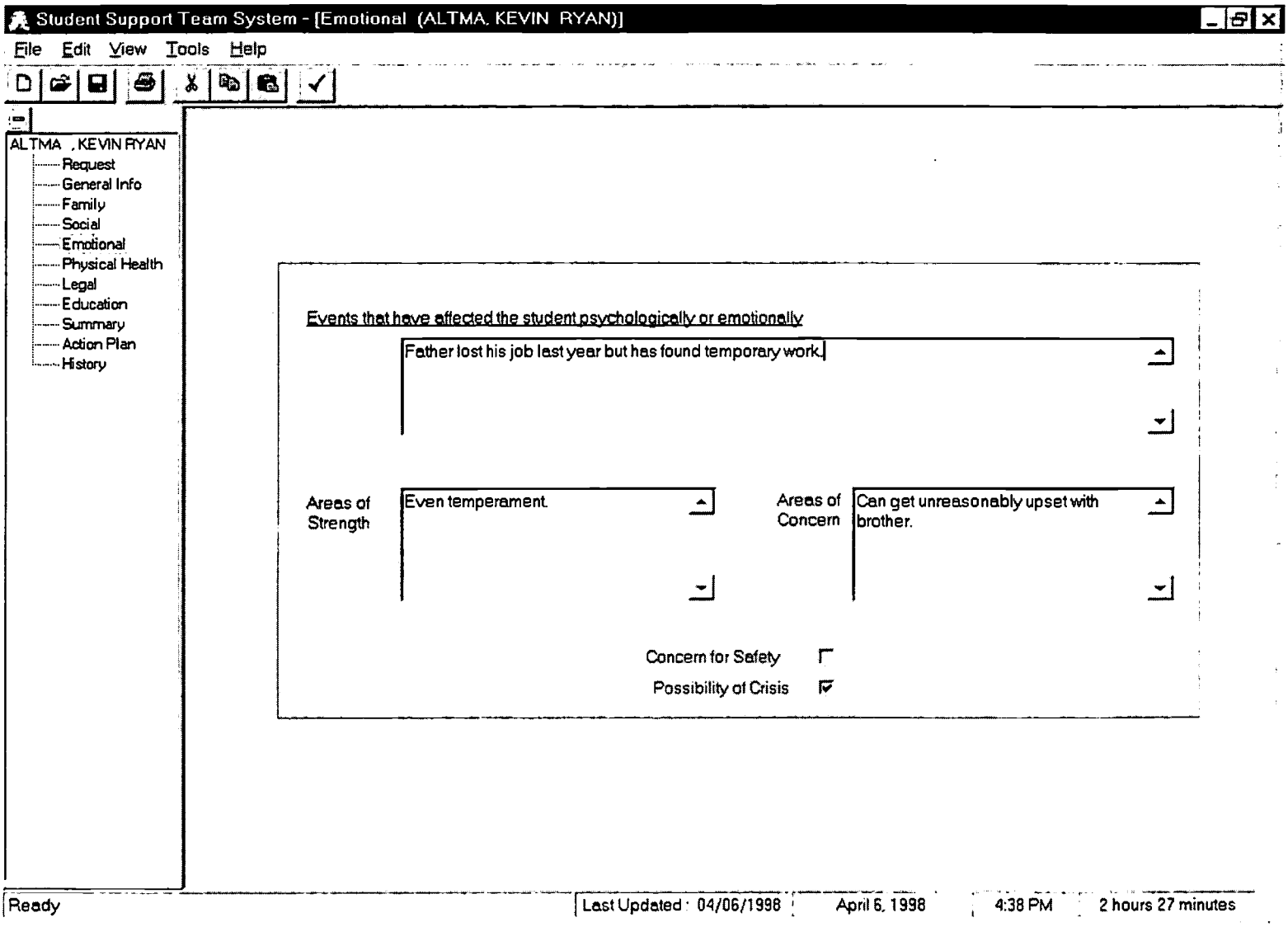

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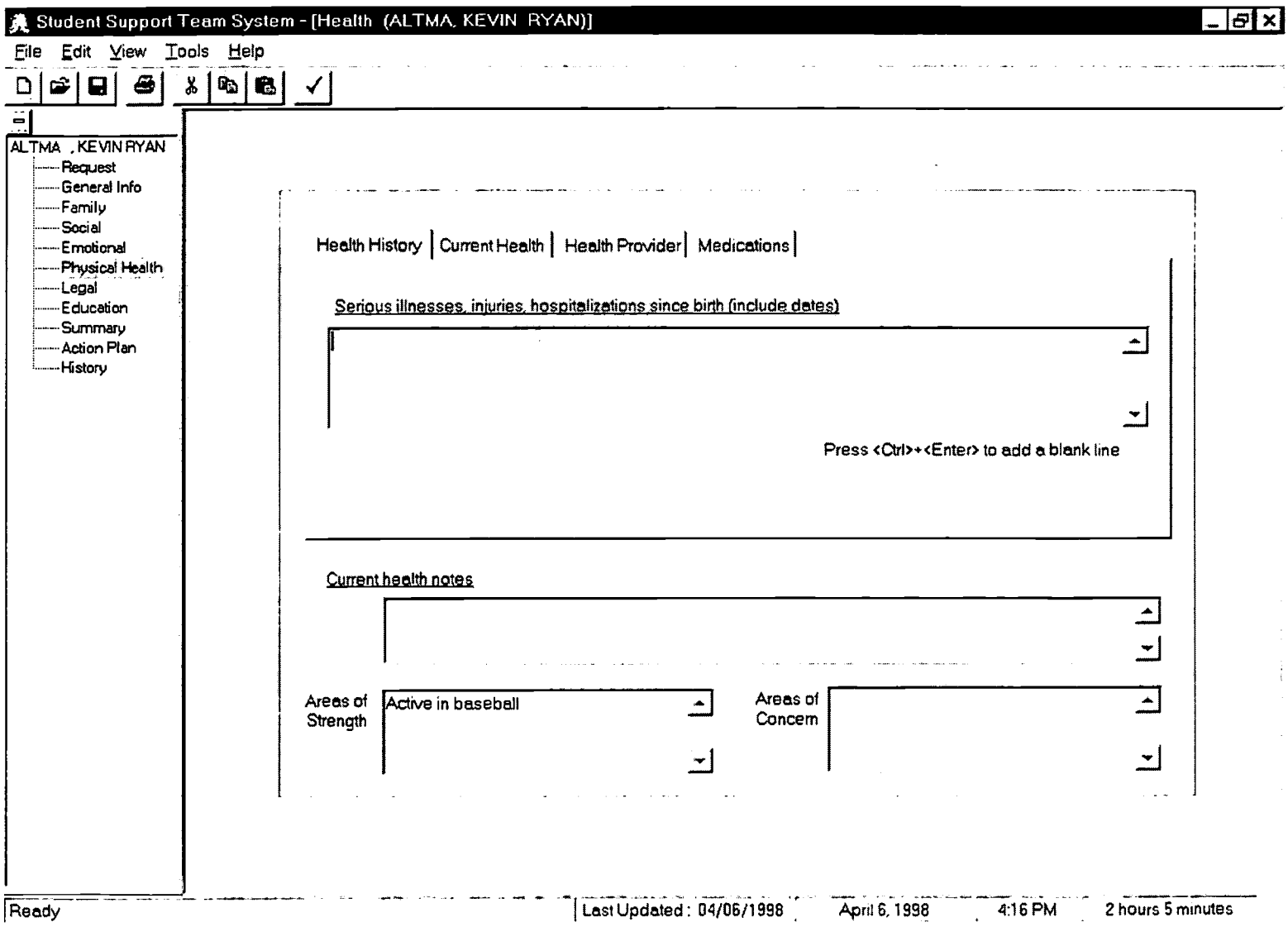

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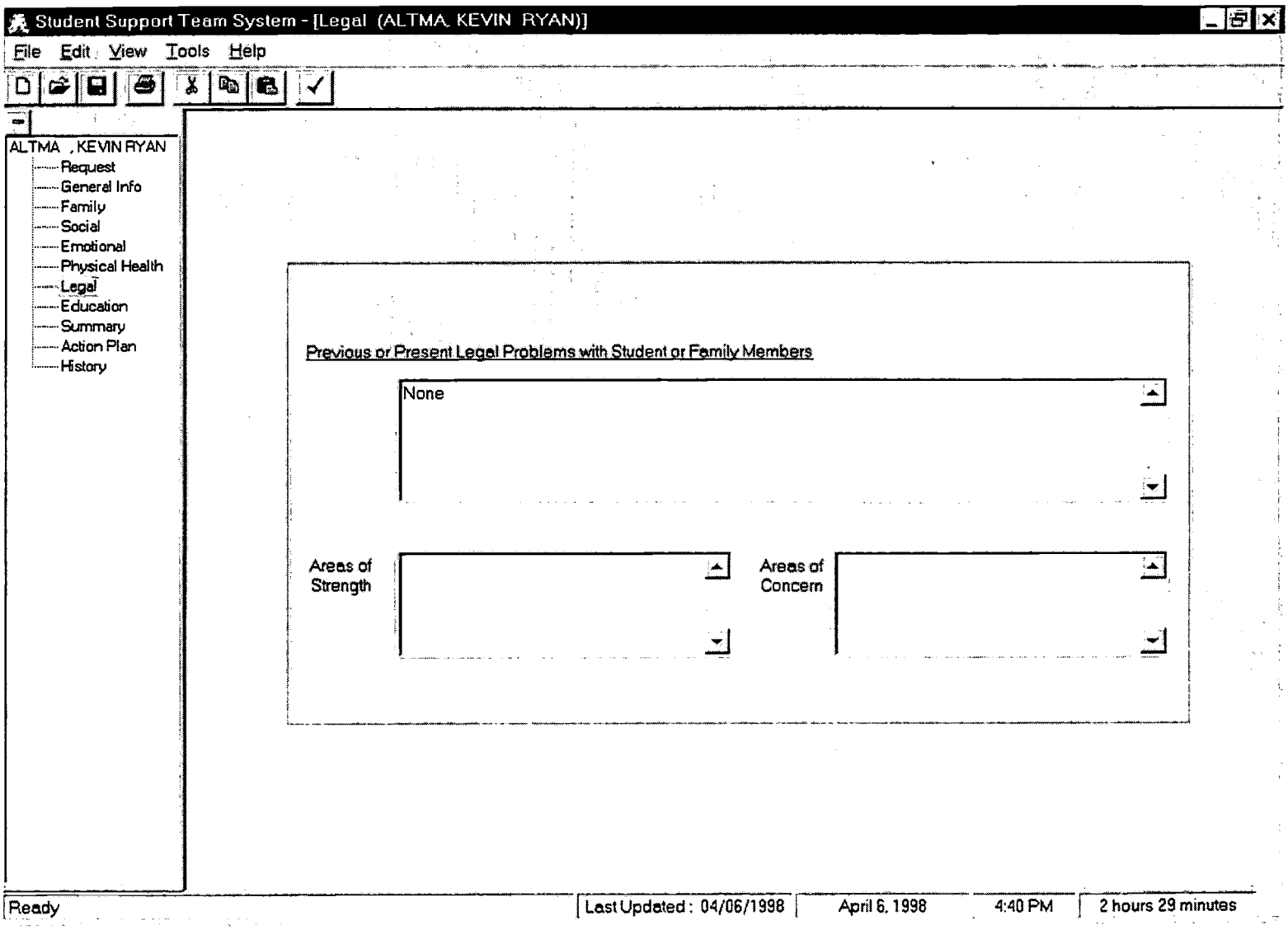

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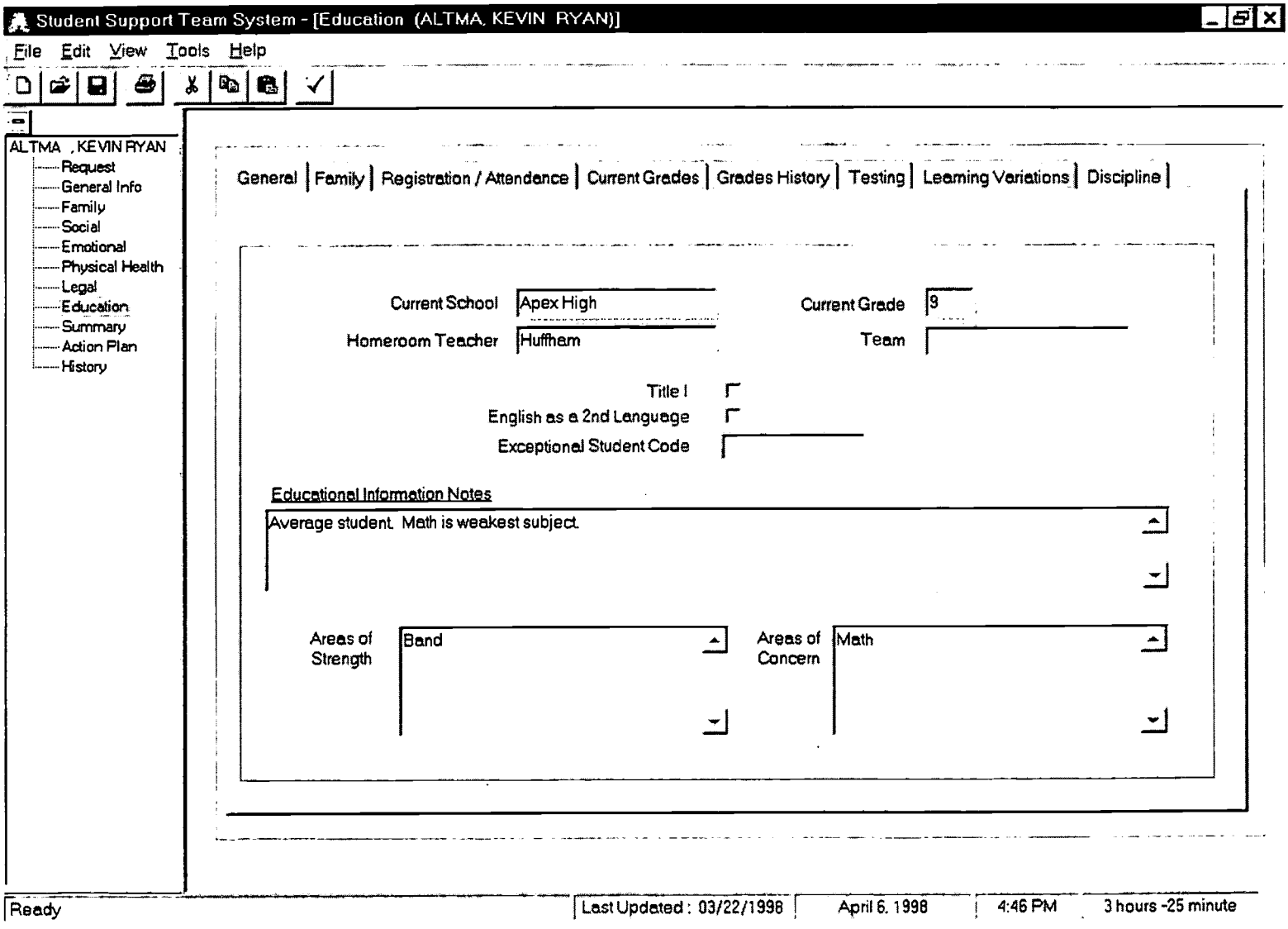

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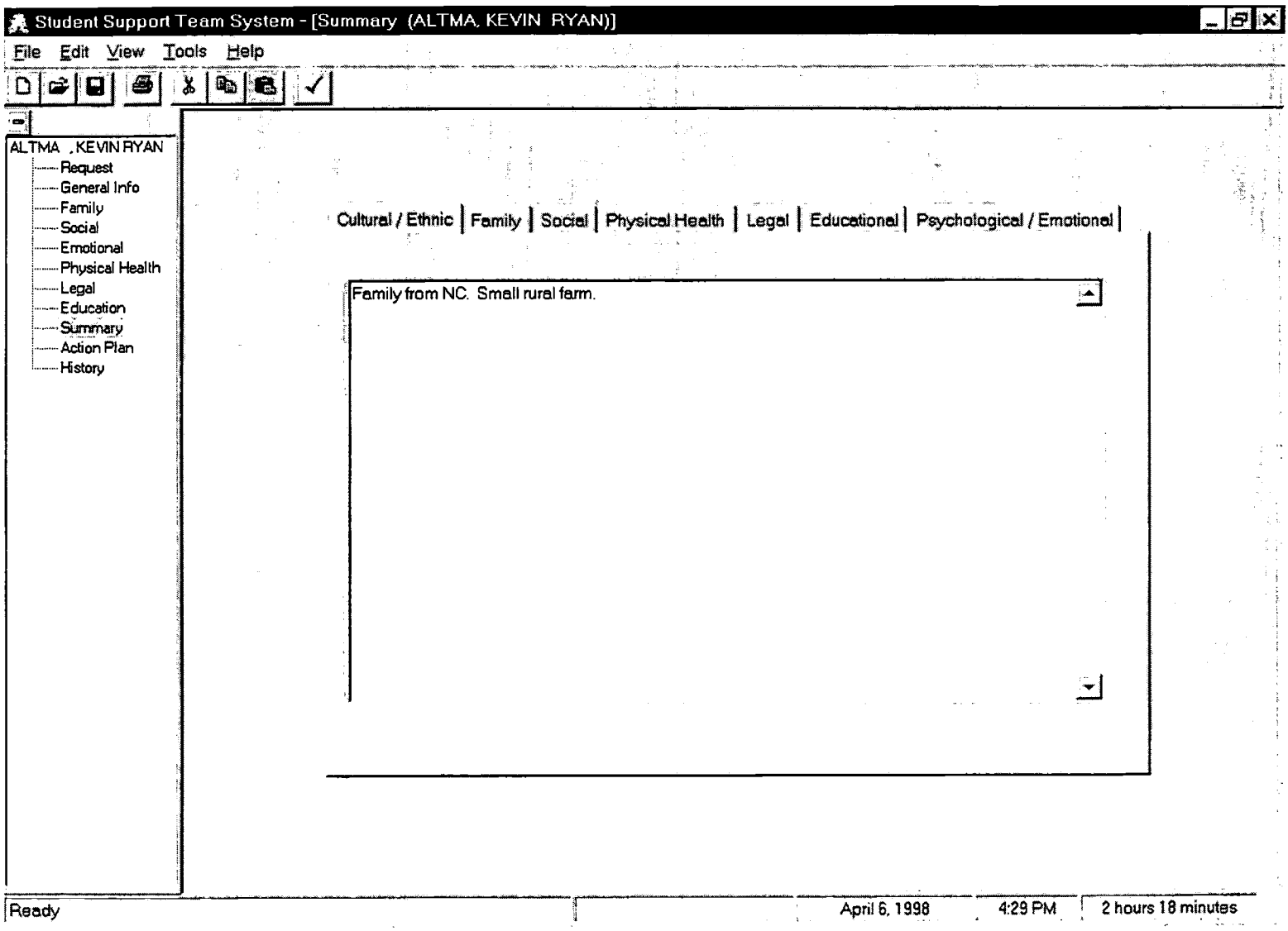

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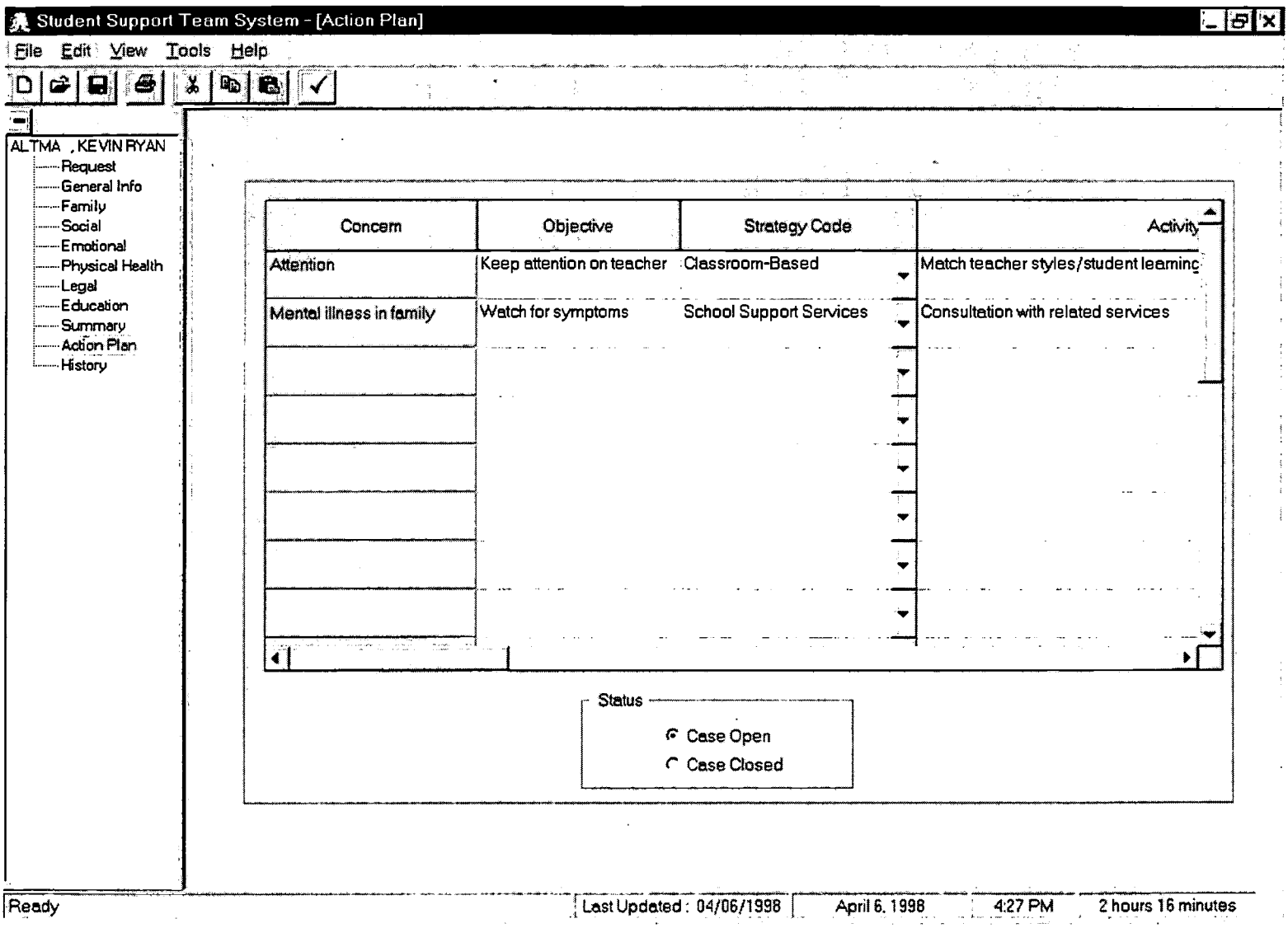

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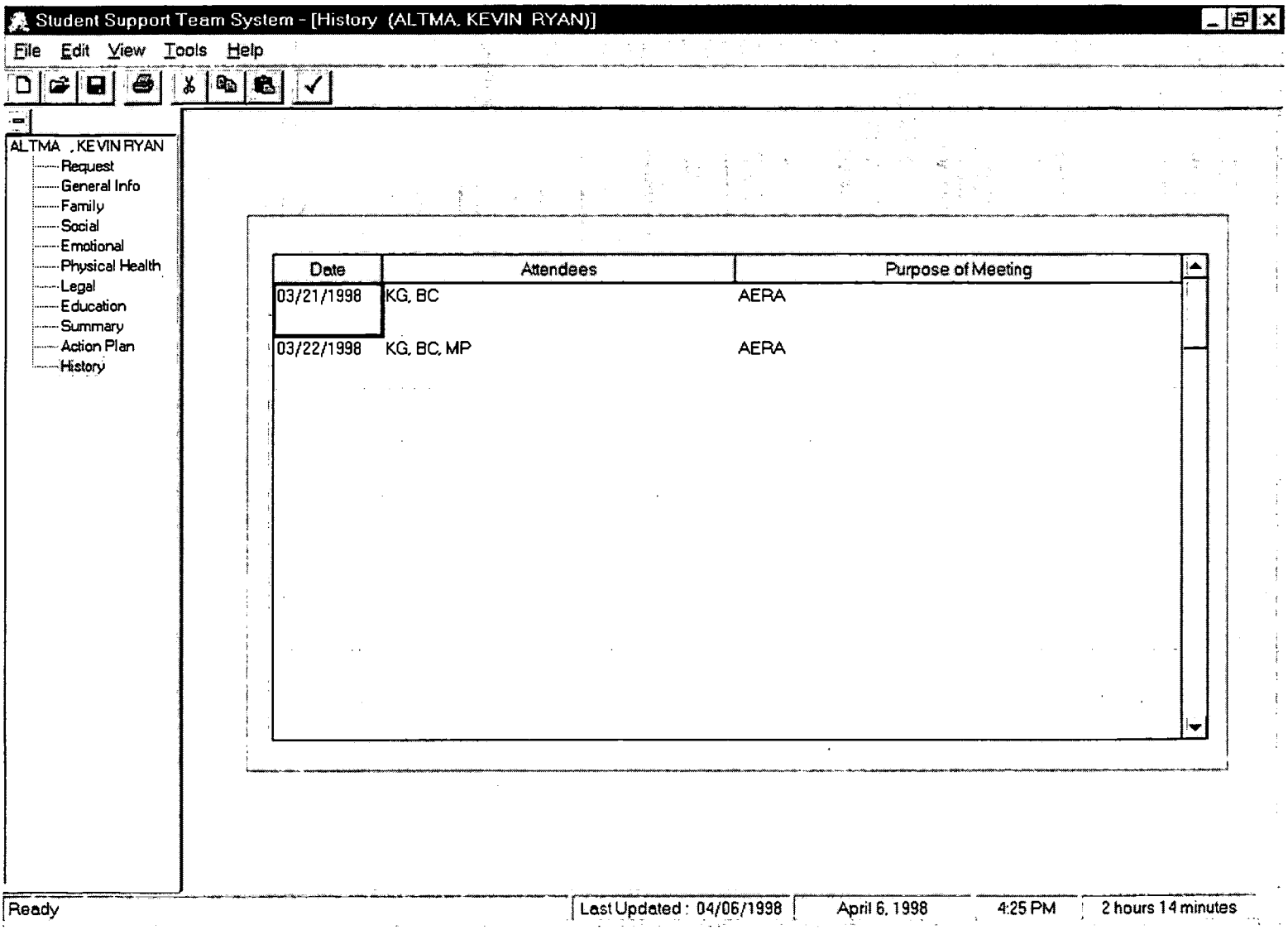


Student Profile

March 22, 1998

ALTMA , KEVIN RYAN

White Male

Birthdate : August , 1983
Grade : 09
Primary Language : English

007 LIN DR
SPRINGS, NC

Home Contact : Paula Altma (919) 212-5555
Work Contact : Roy Altma (919) 333-5555
( ) -

General Strengths : Common sense. Friendly.
General Concerns : Attention span.

Request Information

Request By : Bob M. (Regular Education Teac
Request Date : March 3, 1998
Liaison : Patricia H.

Concerns

Category	Concern	Level	Notes
Behavioral Patterns	Attention	Medium	Kevin seems to be easily distracted in Geometry class.
Family Characteristics	Mental illness in family	Medium	Kevin's aunt is schizophrenic.

Request Notes : This student was in another support program that was terminated by the state.

Previous Strategies : Counseling, peer mediation, family support services

Family Information

Name	Age	Marital Status	Custody / Living	Education / School
Paula Altma Mother / Full	29	Married	Not Applicable Living w/ Student	12th Grade
Roy Altma Father / Full	30	Married	Not Applicable Living w/ Student	11th Grade
Perry Altma Brother / Full	12	Single	Not Applicable Living w/ Student	6th Grade Apex Middle

Responsible : Paula Altma
Roy Altma

Family Notes : Brothers are close but have been fighting more lately. Mother is willing to help. Father is too busy but is disciplinarian.

Family Strengths : Involved mother

Family Concerns : Uninvolved father

Student Profile

March 22, 1998

Social Information

Essential Support : Has one good school friend since the 1st grade.
Involved Support :
Social Notes : Extroverted but with few friends. Two friends moved away when their farms were sold.
Social Strengths : Has lived in the same area since birth.
Social Concerns : Farming community is shrinking so fewer friends at home.

Emotional Information

Emotional Notes : Father lost his job last year but has found temporary work.
Emotional Strengths : Even temperament.
Emotional Concerns : Can get unreasonably upset with brother.

Health Information

Health History :
Health Notes :
Physicians : Dr. Johnson

Sight/Hearing Acuity :

Far :	Pass	2/2/1995	(with glasses)
Near :	Pass	2/2/1995	(with glasses)
Hearing :	Pass	2/3/1995	

Lunch Status :

Medical Plan Available | No Concern for Health Crisis | No Concern for Health Safety

Health Strengths :
Health Concerns :

Legal Information

Legal Notes : None
Legal Strengths :
Legal Concerns :

Student Profile

March 22, 1998

Education Information

Current School : Apex High
Homeroom Teacher : Huffham
Grade : 09
Team :

Exceptionality Code :

Family Involvement

Date	Family / School Contact	School Role / Type of Contact	Purpose / Comments
3/16/1998	Paula Patricia	Counselor Phone Call	review distractibility

School Registration & Attendance

School	Grade	Entry / Exit Code & Date	
Apex High	9	E1 - First enrollment in public school in NC this year	8/18/1997

Current Days Enrolled : 63
Previous Days Enrolled : 180
Current Days Absent : 5
Previous Days Absent : 21

Current Grades

Grading Period :

Kindergarden (# Ns)	1st & 2nd Grade	3rd - 12th Grade
- - -	- - -	- - -
- - -	- - -	- - -
- - -	- - -	- - -
	- - -	- - -
	- - -	
	- - -	

Semister GPA : 0.00
Year GPA : 0.00
Classes Taken : 0
Classes Passed : 0
Classes Failed : 0

Learning Style	Gregoric Categories	Multiple Intelligences	Student Evaluation
Tactile Learner			Unit Test

Behavior Occurances

Date	Comments
1/12/1997	Fighting on playground
2/18/1998	Skipped class

Student Profile

March 22, 1998

Family Learning History : Schizophrenic aunt dropped out of high school.
Educational Notes : Average student. Math is weakest subject.
Education Strengths :
Educational Concerns :

Action Plan

Objective / Activity	Strategy Code / Activity	Est Com / Review	Status / Outcome / Assess
Keep attention on te	Classroom-Based	1/2/1998	Discontinued
	Match teacher styles/stu	2/2/1998	Moderately Effective
Responsible	Mrs. Krauss	Regular education te	Teacher Feedback
Watch for symptoms	School Support Service	3/4/1998	Continued w/ modifications
	Consultation with relate	2/5/1998	Very Effective
Responsible	Ms. Lasher	Outside Agency	Other

History

Meeting Date	Purpose	Attendees
3/21/1998	AERA	KG, BC

Student Action Plan

March 22, 1998

Student : ALTMA , KEVIN RYAN
Student ID :
Case Open

Parent / Gardian :	Paula Altma			Liaison :	Patricia H.
Address :	007 LIN DR SPRINGS, NC			Homeroom Teacher :	Huffham
				Team :	
Home Contact :	Paula Altma		(919) 212-5555		
Work Contact :	Roy Altma		(919) 333-5555		
			(___) ___-____		

Concerns

Category	Concern	Level	Notes
Behavioral Patterns	Attention	Medium	Kevin seems to be easily distracted in Geometry class.
Family Characteristics	Mental illness in family	Medium	Kevin's aunt is schizophrenic.

	Strengths	Concerns
General :	Common sense. Friendly.	Attention span.
Family :	Involved mother	Uninvolved father
Social :	Has lived in the same area since birth.	Farming community is shrinking so fewer friends at home.
Emotional :	Even temperament.	Can get unreasonably upset with brother.
Health :	Active in baseball	
Legal :		
ducation :	Band	Math

Objective :	Keep attention on teacher	Strategy Code :	Classroom-Based	Est. Completion :	1/2/1998
Responsible :	Mrs. Krauss	Activity :	Match teacher	Review :	2/2/1998
		Category :			
Status :	Discontinued	Status Notes :			
Outcome :	Moderately Effective	Assessment :	Teacher Feedback		

Objective :	Watch for symptoms	Strategy Code :	School Support Services	Est. Completion :	3/4/1998
Responsible :	Ms. Lasher	Activity :	Consultation with related	Review :	2/5/1998
		Category :			
Status :	Continued w/ modifications	Status Notes :	Family learning what symptoms to look for.		
Outcome :	Very Effective	Assessment :	Other		

Student Support Team Case Log

April 6, 1998

Student : KEVIN RYAN ALTMA (111111111)
Liaison Assigned : Patricia H.
Grade : 9

Meetings

3/21/1998	Classroom Behavior	KG, BC
3/22/1998	Concentration	KG, BC, MP

Student : KEVIN AIME NADEA (222222222)
Liaison Assigned :
Grade : 8

Meetings

3/21/1998	Behavior	KG, SW, DM

Student : ELIZABETH NICO CULI (3333333)
Liaison Assigned : Nancy B.
Grade : 10

Meetings

4/6/1998	Discussion	KG, BC, MP

SST Team Summary Report

April 6, 1998

Gender

2 Males (67%)
1 Females (33%)

Race

3 Whites (100%)

Concerns

2 Family Characteristics (67%)
1 Behavioral Patterns (33%)

Request Relationships

1 SAP Coordinators (33%)
1 Regular Education Teachers (33%)
1 Psychologists (33%)

Exceptionality Codes

Lunch Status

3 Cases Lunch Status Unknown

Grade

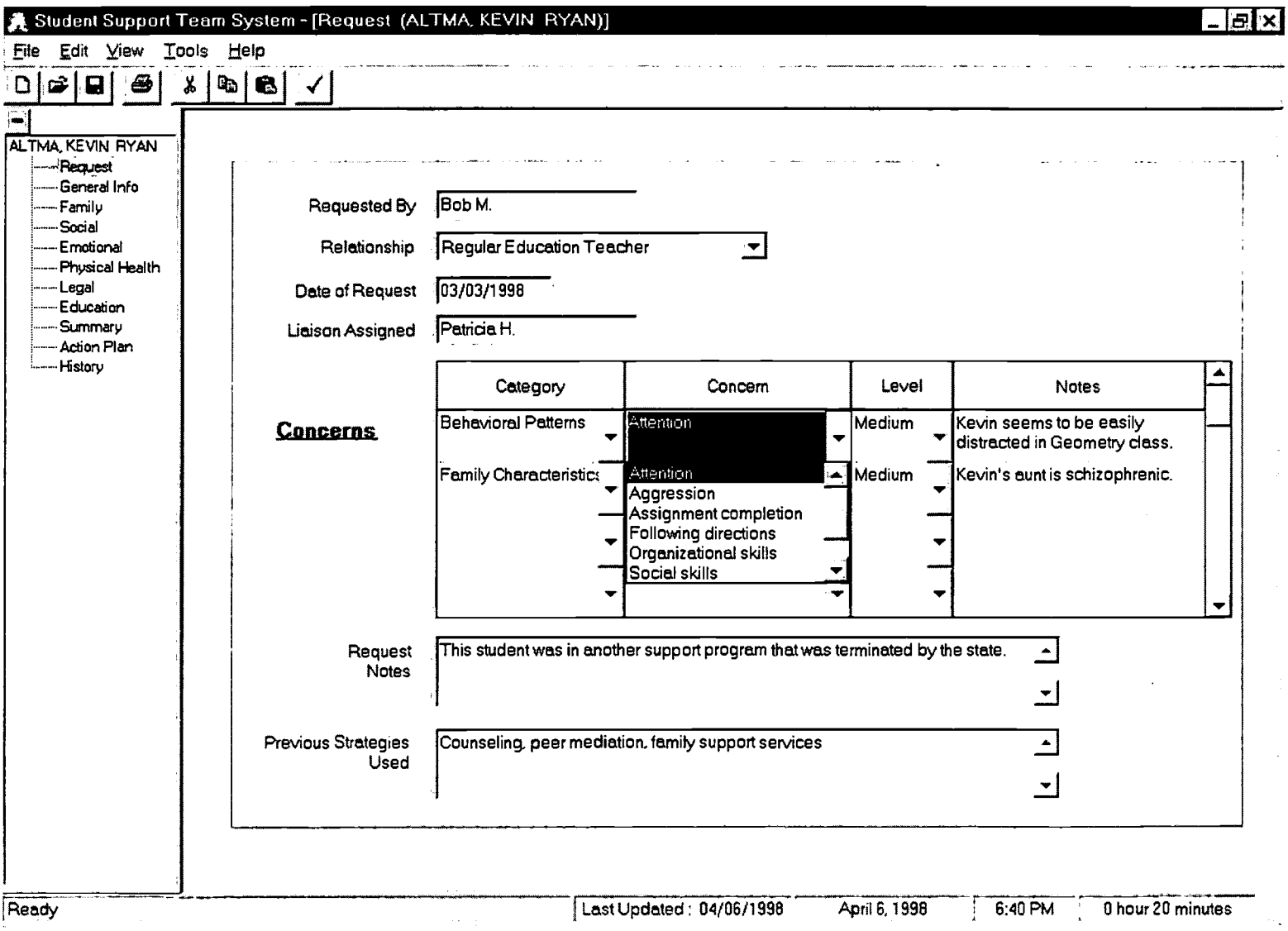
1 8th Grade (33%)
1 9th Grade (33%)
1 10th Grade (33%)

Title 1 0%

Strategies

2 School Support Services (67%)
1 Classroom-Based (33%)

Attachment # 6.a.



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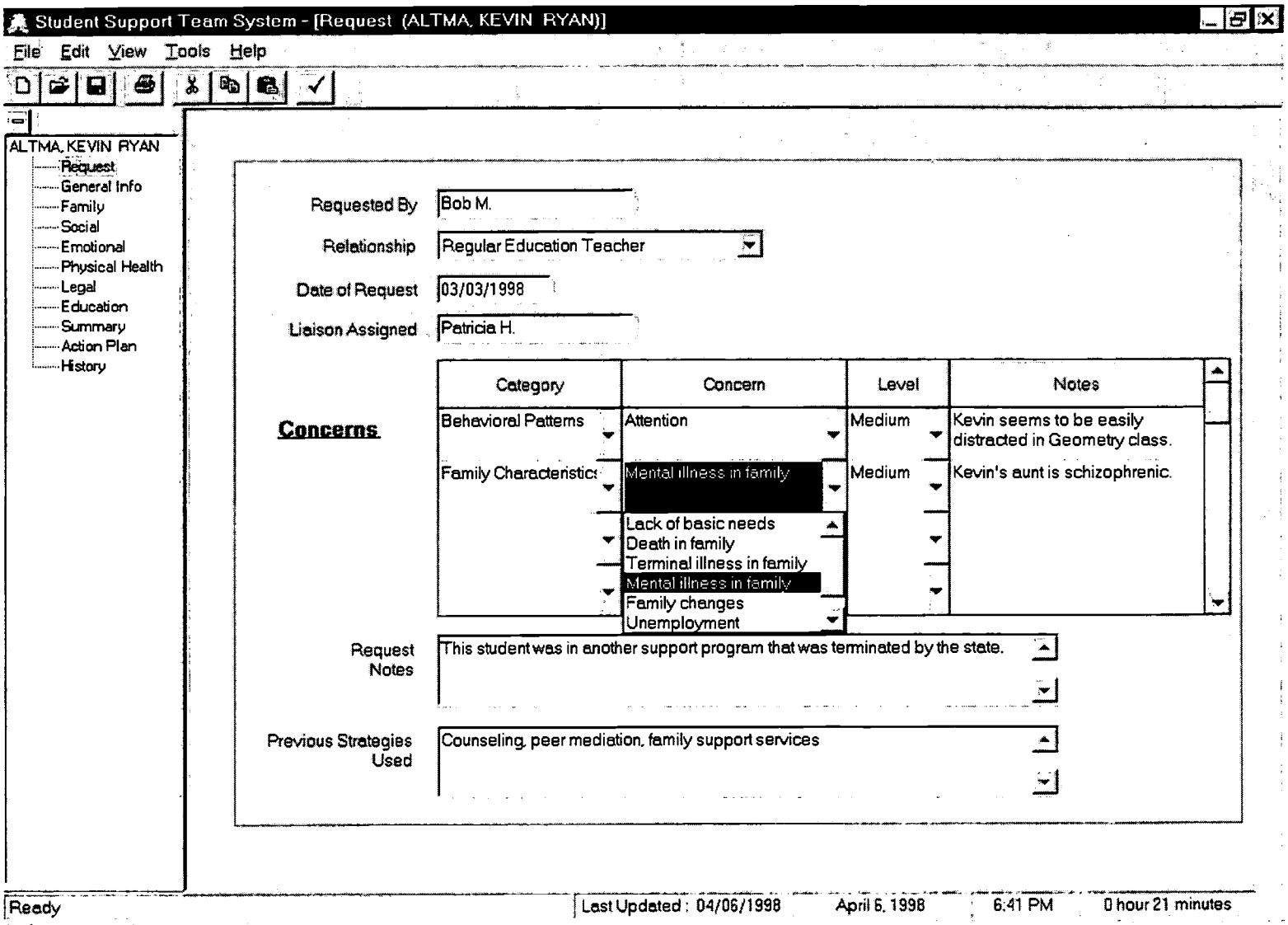

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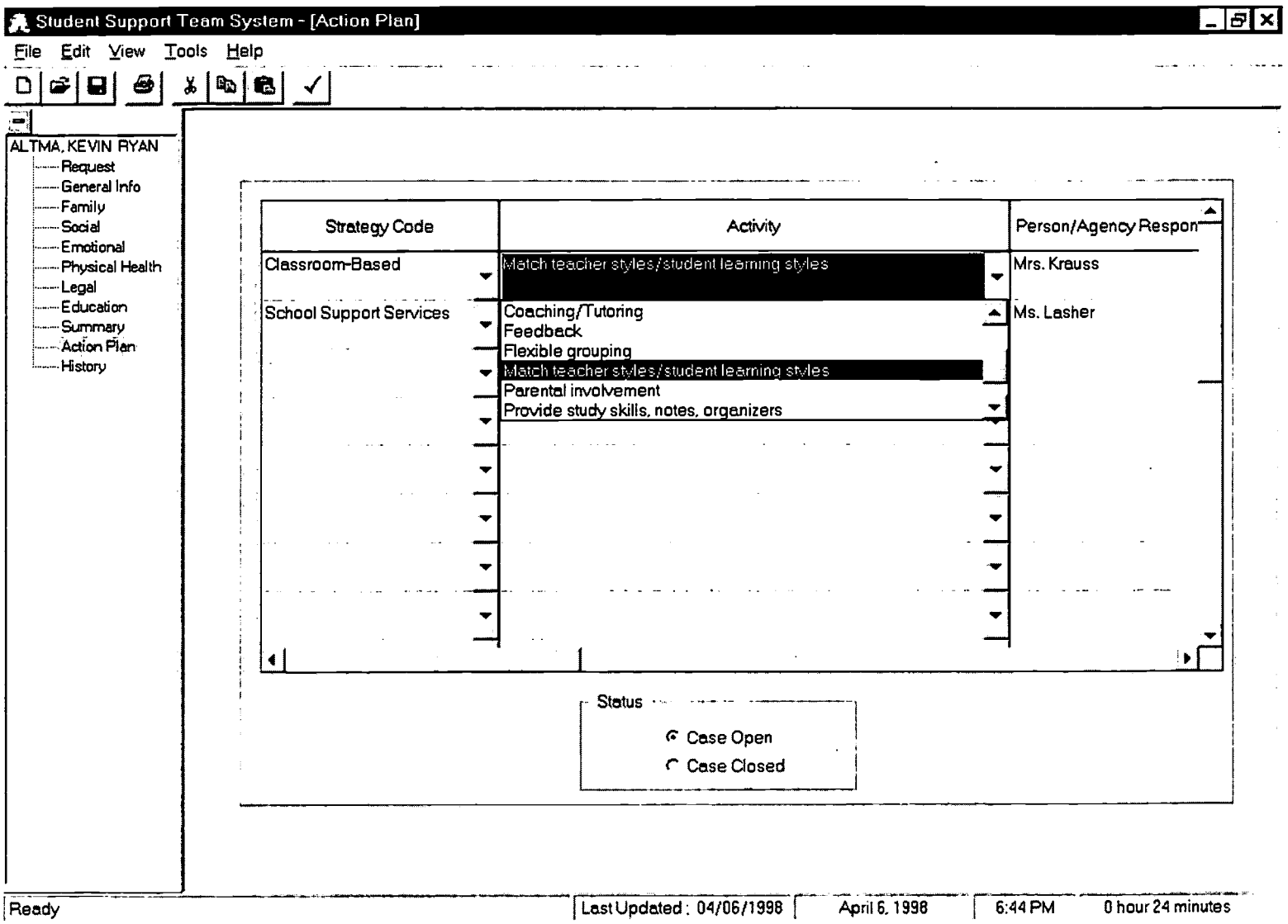
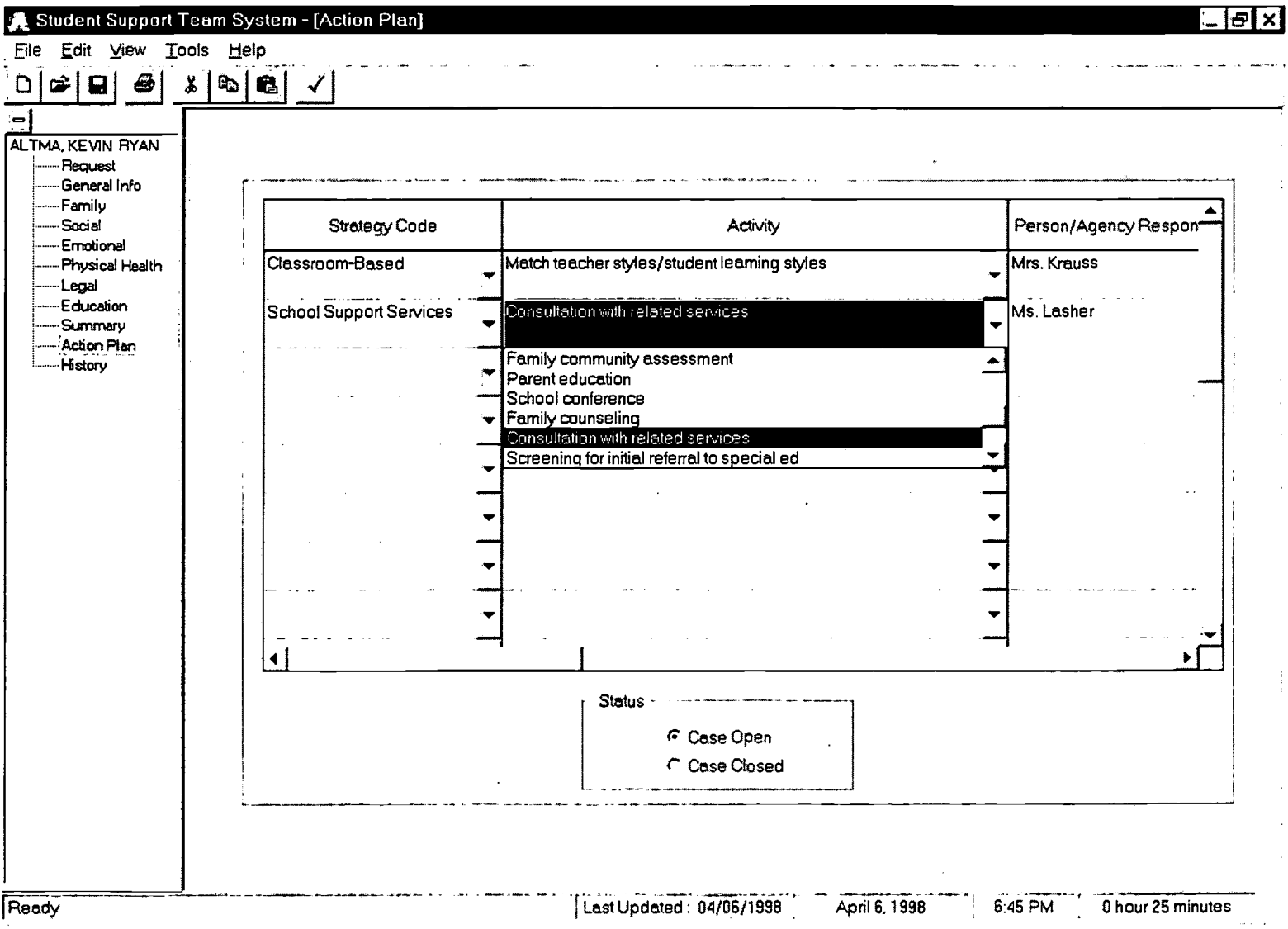
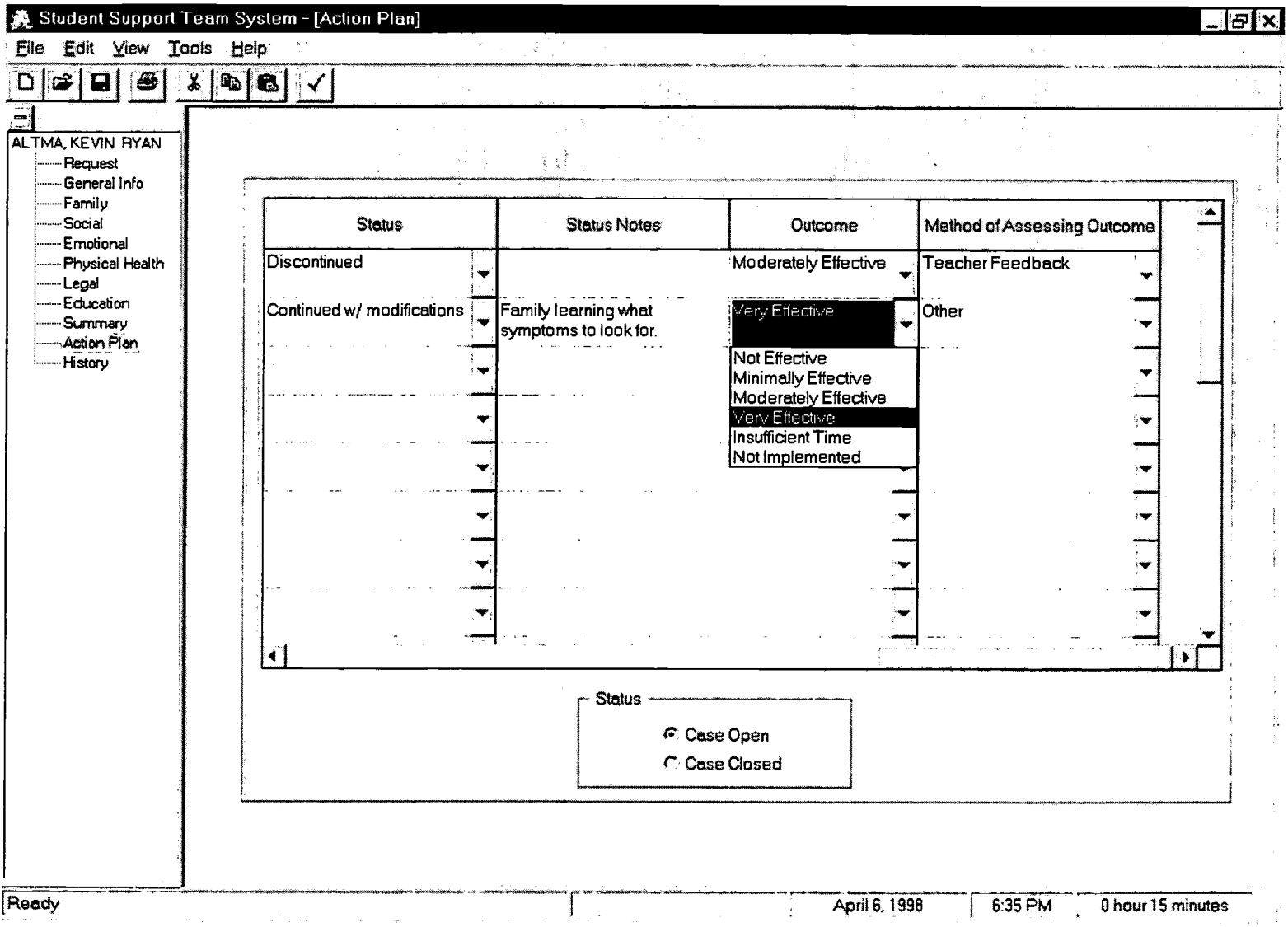



Student Support Team System - [Action Plan]
File Edit View Tools Help
ALTMA, KEVIN RYAN
Request
General Info
Family
Social
Emotional
Physical Health
Legal
Education
Summary
Action Plan
History
Strategy Code
Activity
Person/Agency Respon
Classroom-Based
Match teacher styles/student learning styles
Mrs. Krauss
School Support Services
Consultation with related services
Ms. Lasher
Family community assessment
Parent education
School conference
Family counseling
Consultation with related services
Screening for initial referral to special ed
Status
Case Open
Case Closed
Ready
Last Updated : 04/06/1998
April 6, 1998
6:45 PM
0 hour 25 minutes

Attachment # 7.a.



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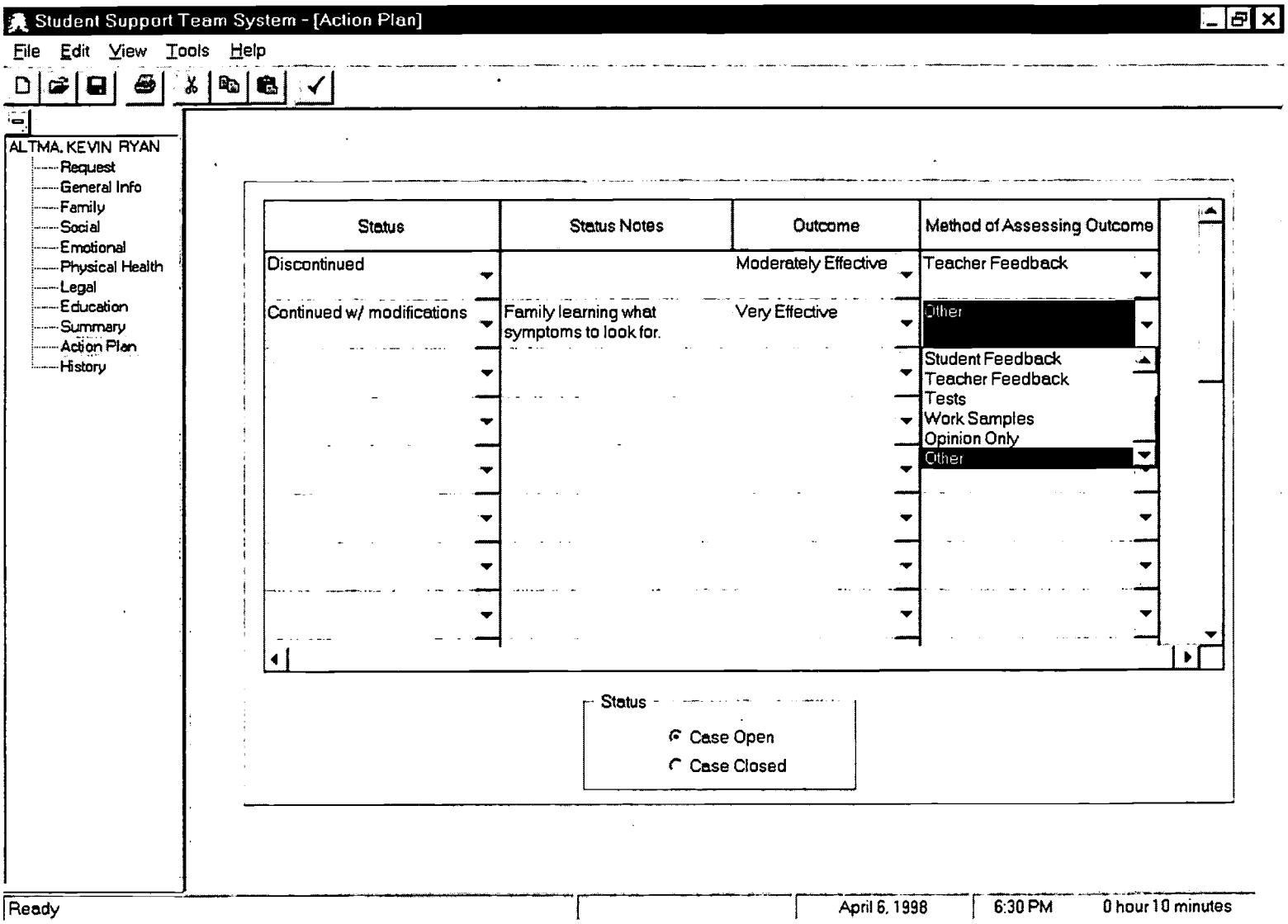
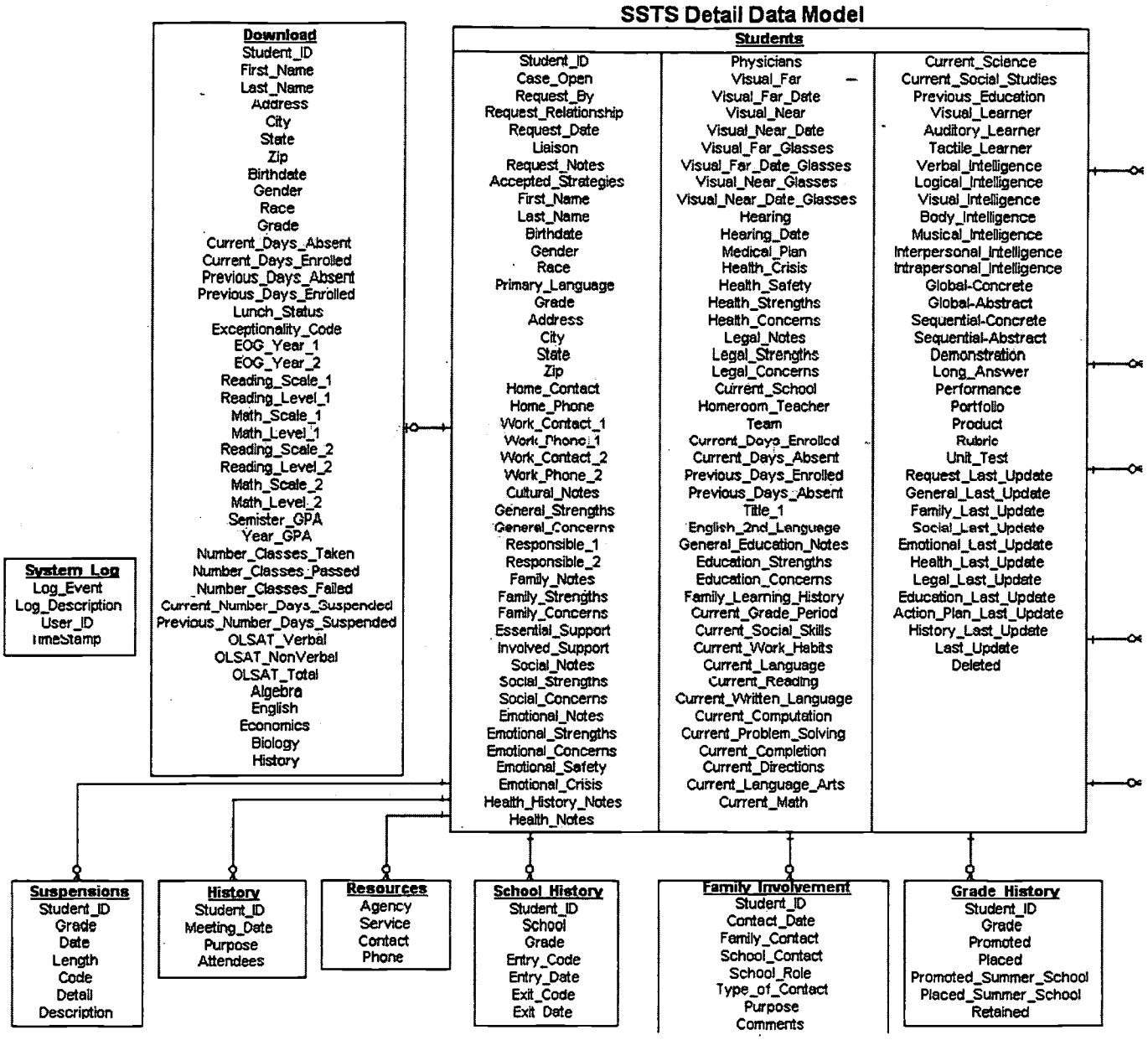
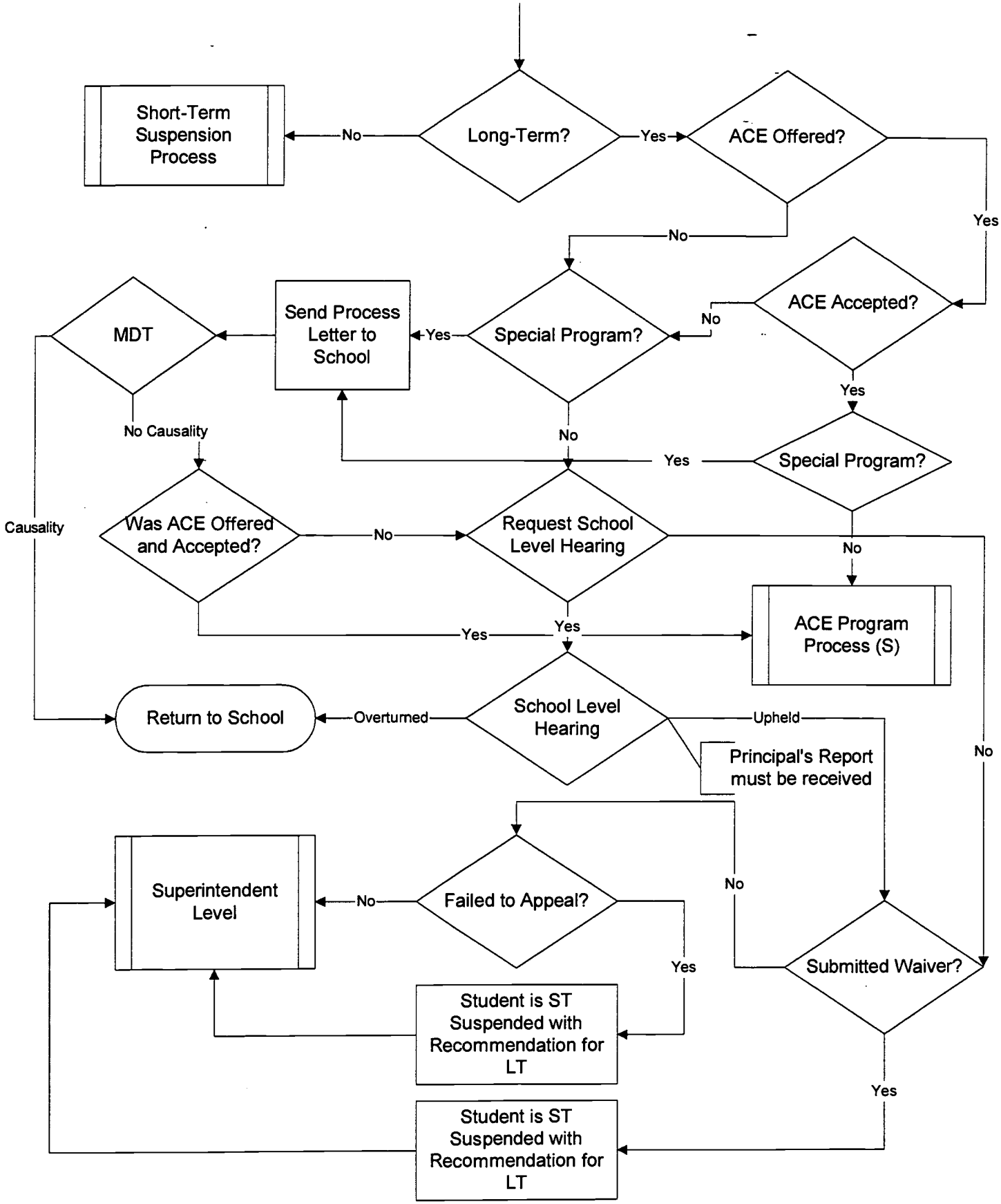
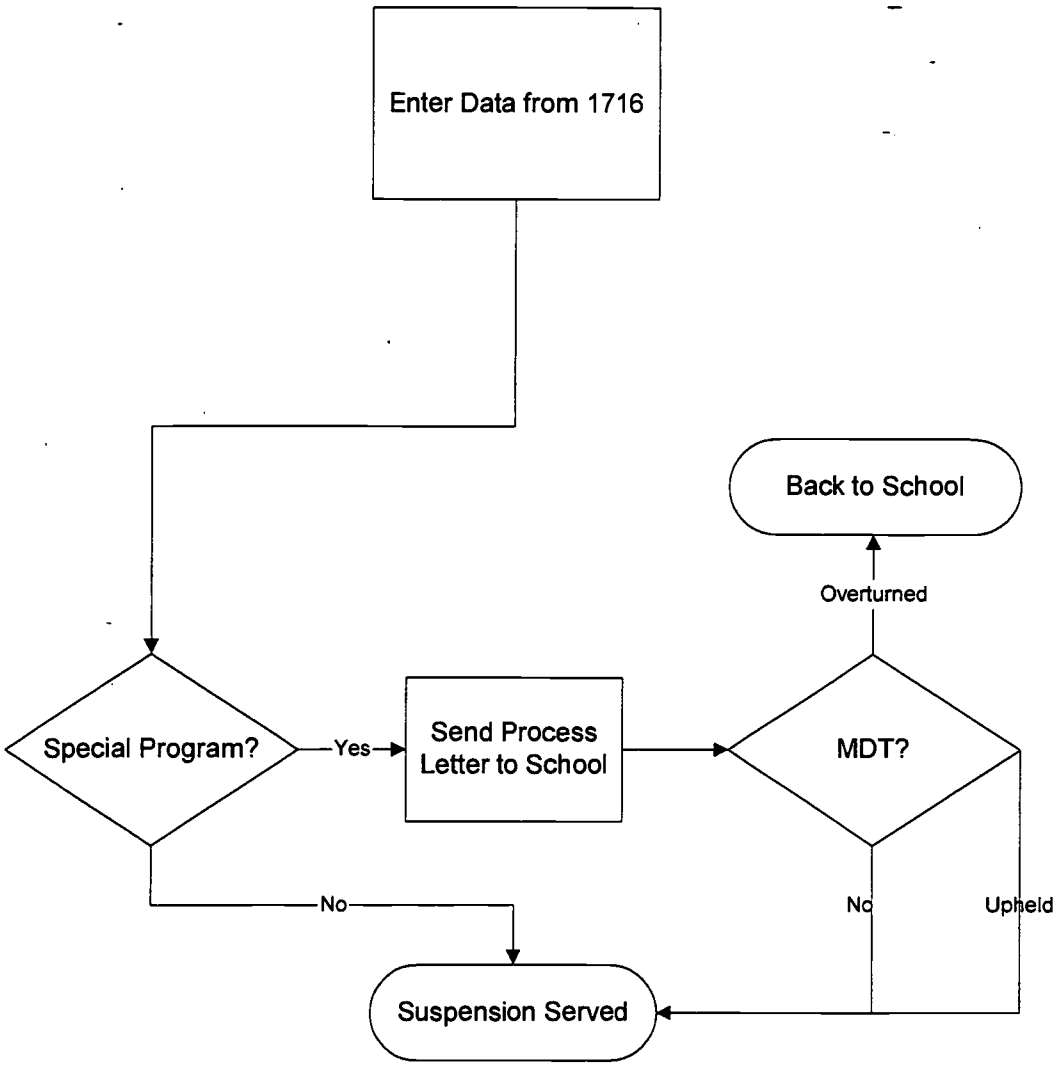




Begin Suspension Process - School Level

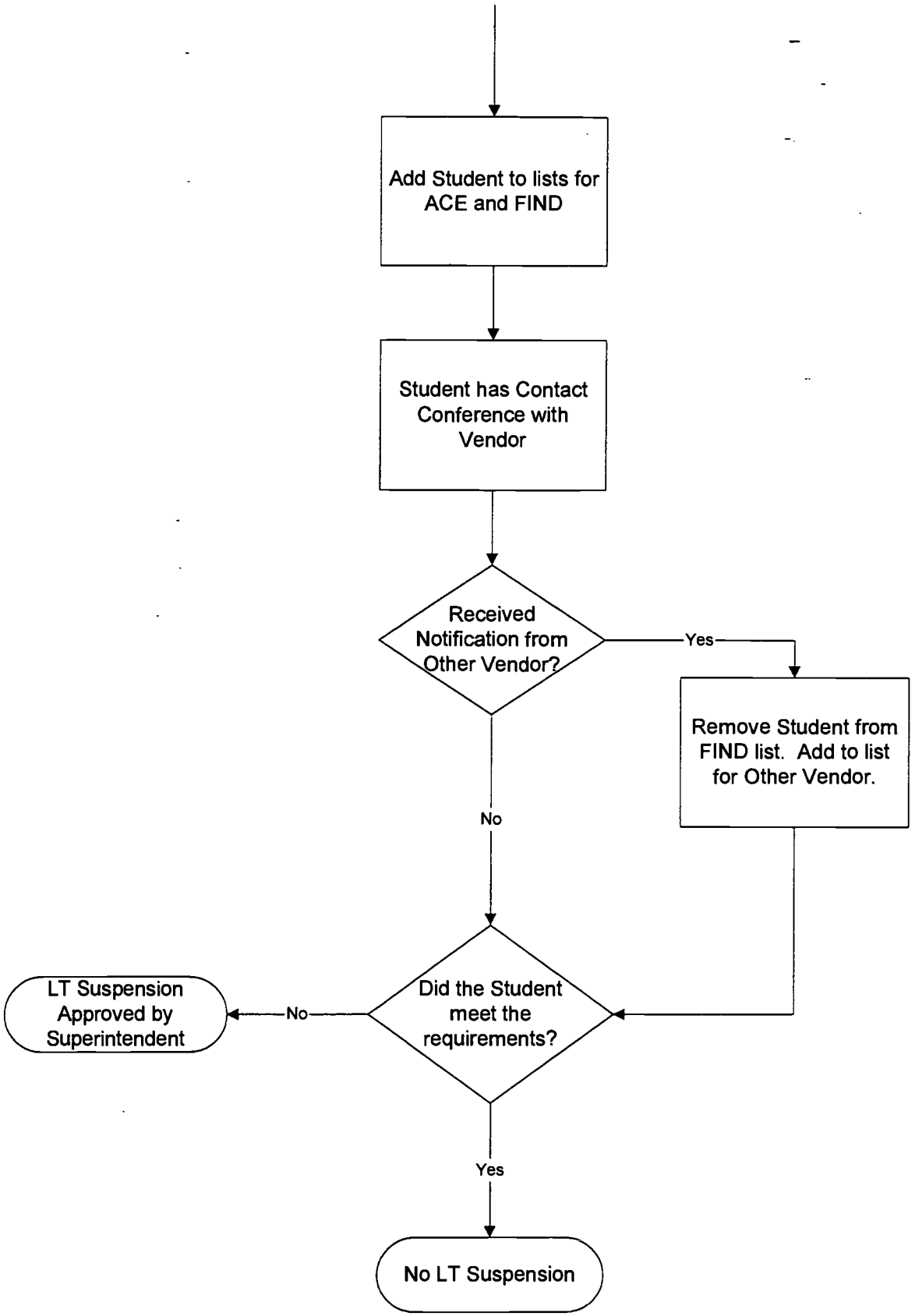


Short-Term Suspension Process

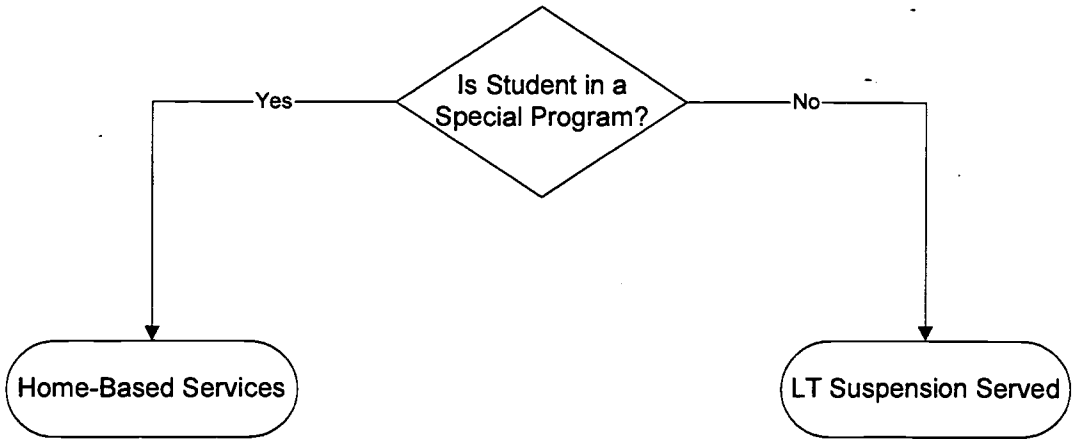


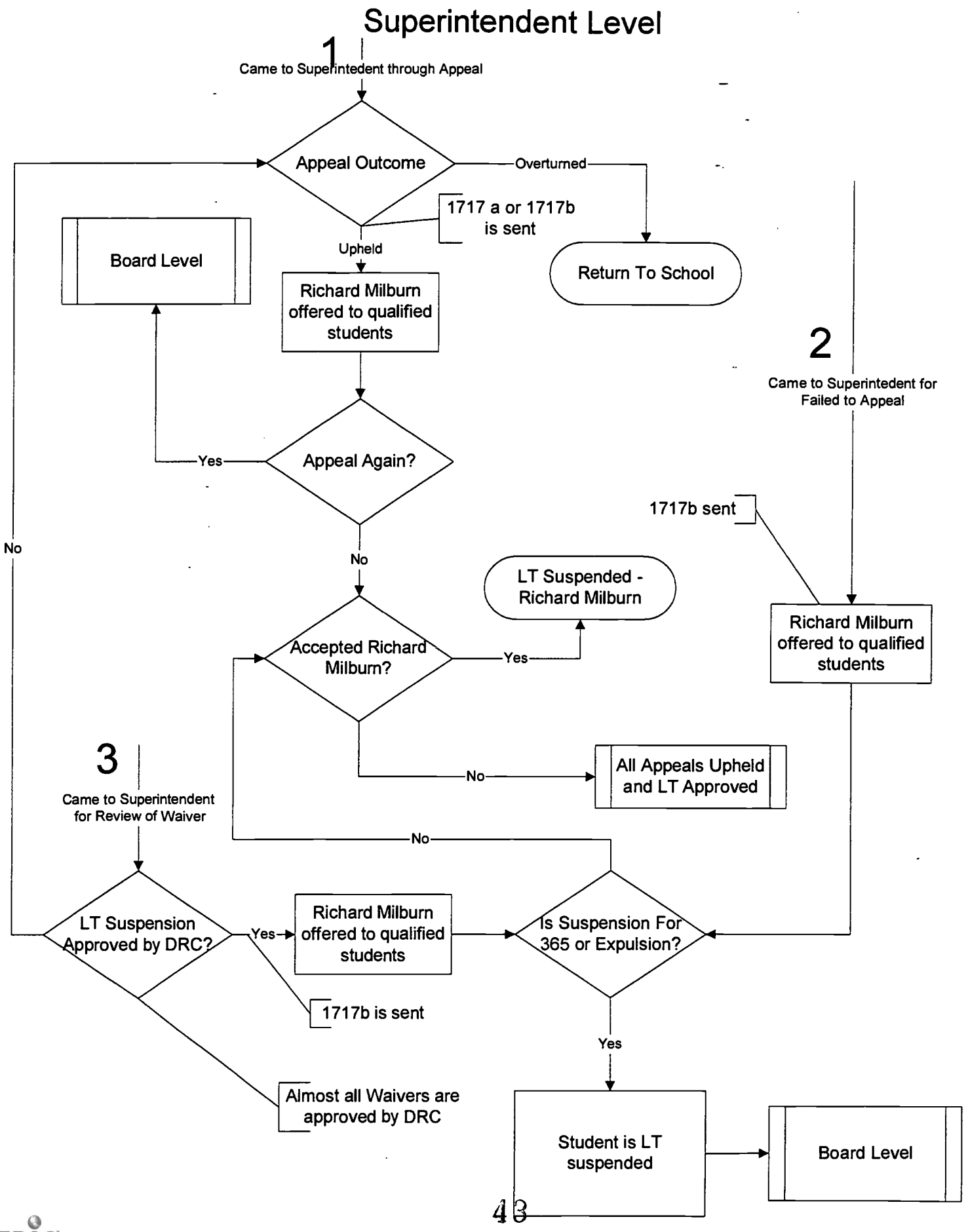
Attachment # 9

ACE Program Process

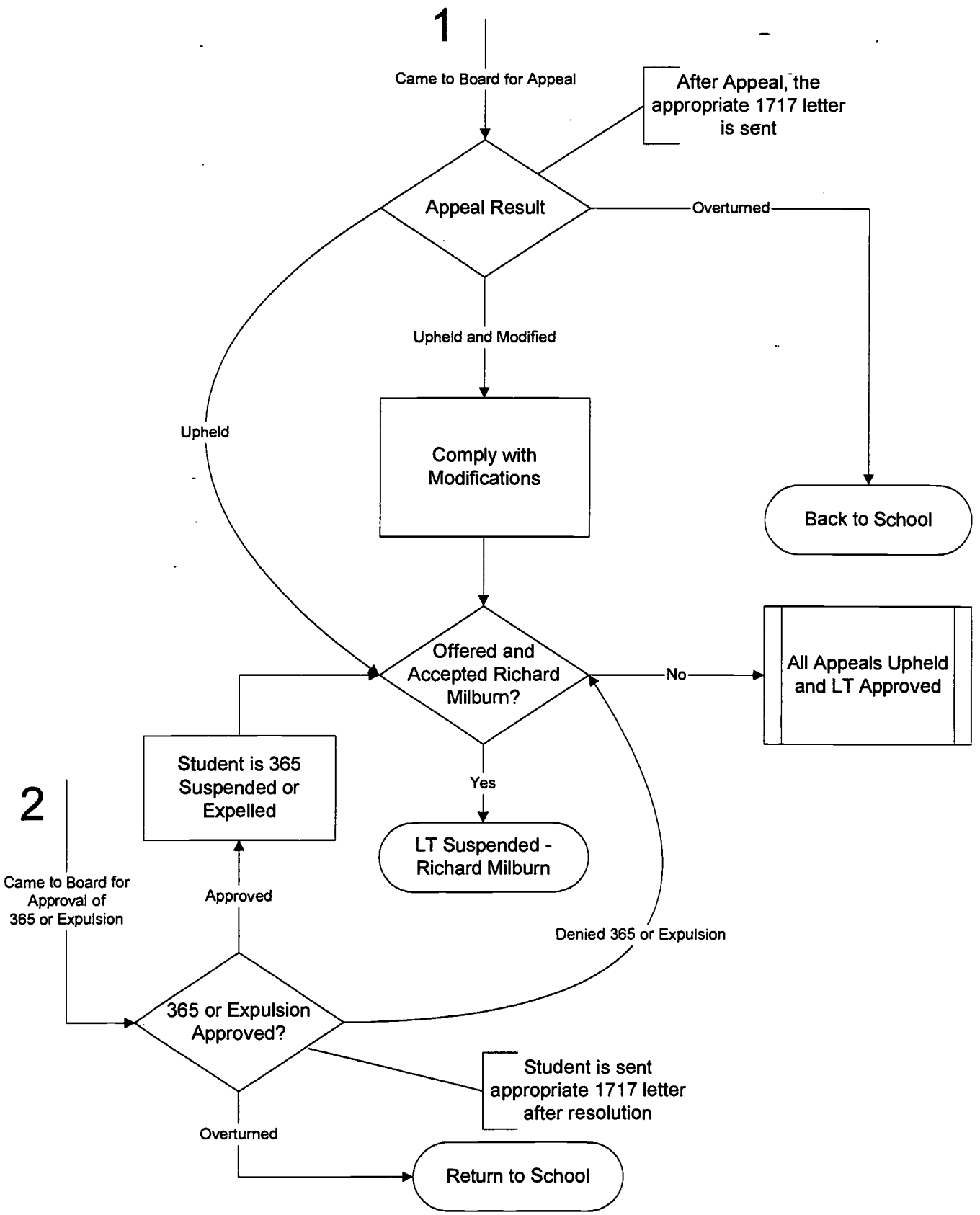


All Appeals Upheld and LT Approved

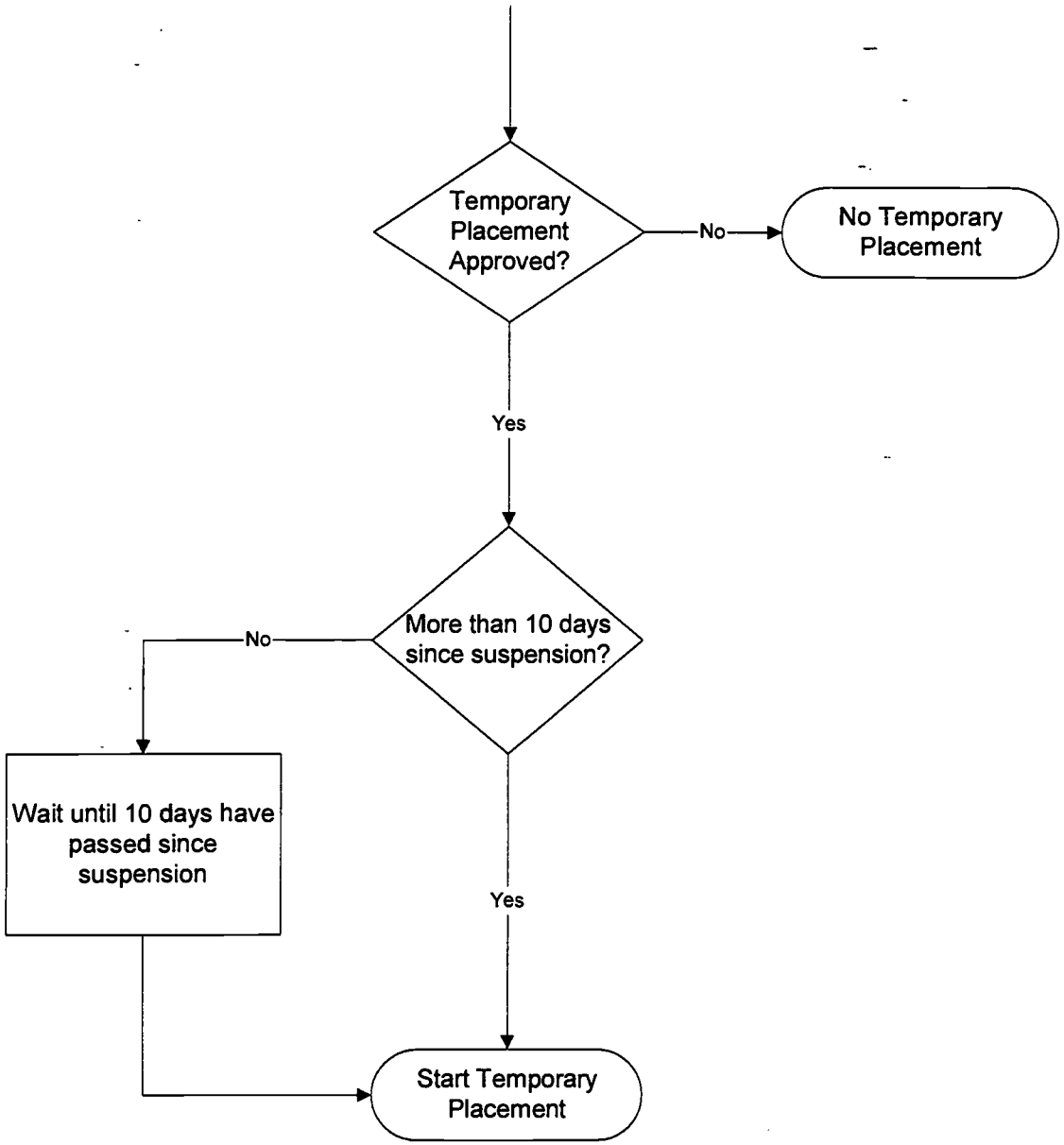



Superintendent Level
1
Came to Superintedent through Appeal
Appeal Outcome
Overturned
1717 a or 1717b is sent
Upheld
Board Level
Return To School
Richard Milburn offered to qualified students
2
Came to Superintedent for Failed to Appeal
Yes
Appeal Again?
1717b sent
No
No
LT Suspended - Richard Milburn
Accepted Richard Milburn?
Yes
Richard Milburn offered to qualified students
3
Came to Superintendent for Review of Waiver
No
All Appeals Upheld and LT Approved
No
LT Suspension Approved by DRC?
Yes
Richard Milburn offered to qualified students
Is Suspension For 365 or Expulsion?
1717b is sent
Yes
Almost all Waivers are approved by DRC
Student is LT suspended
Board Level

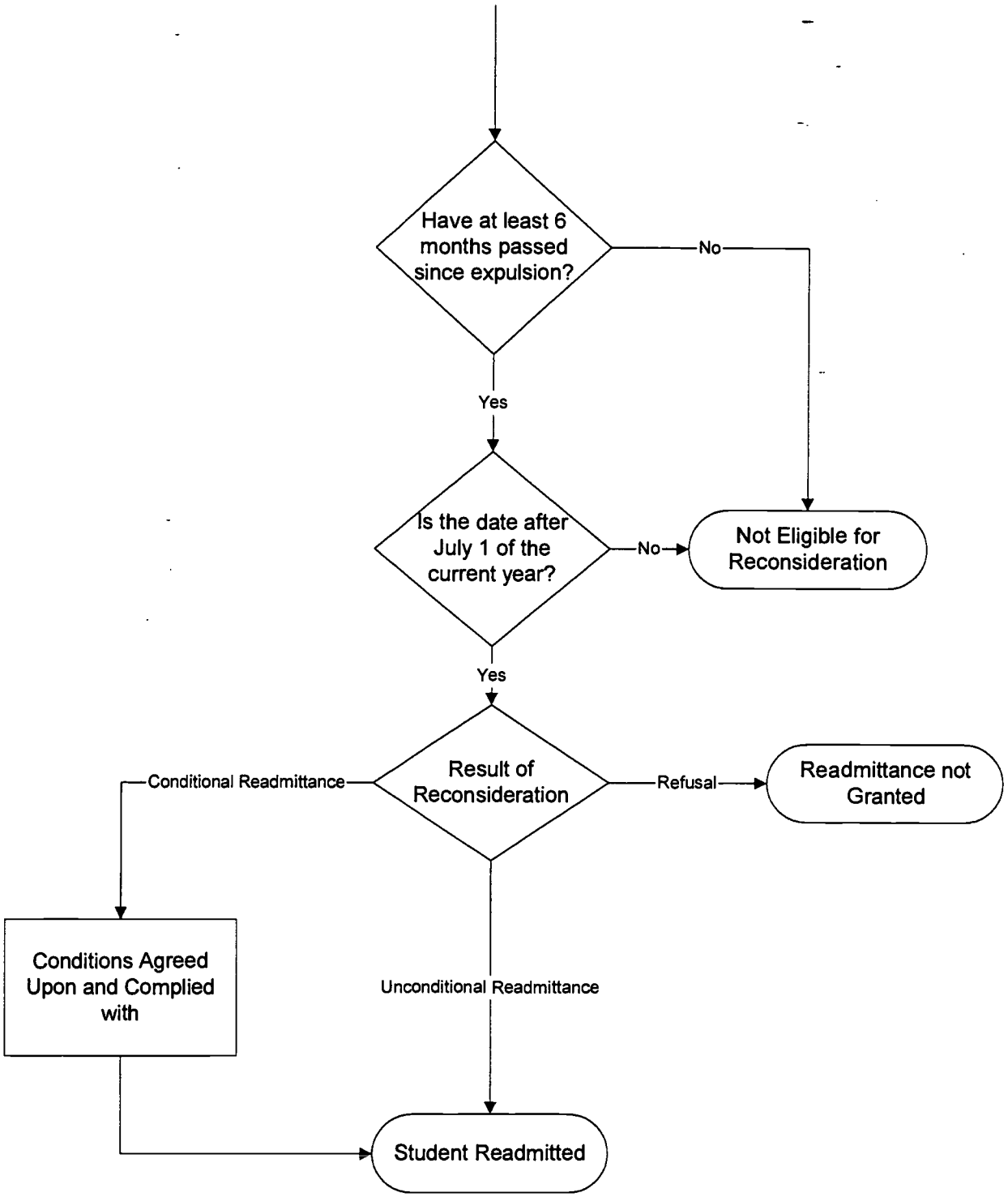
Board Level Process



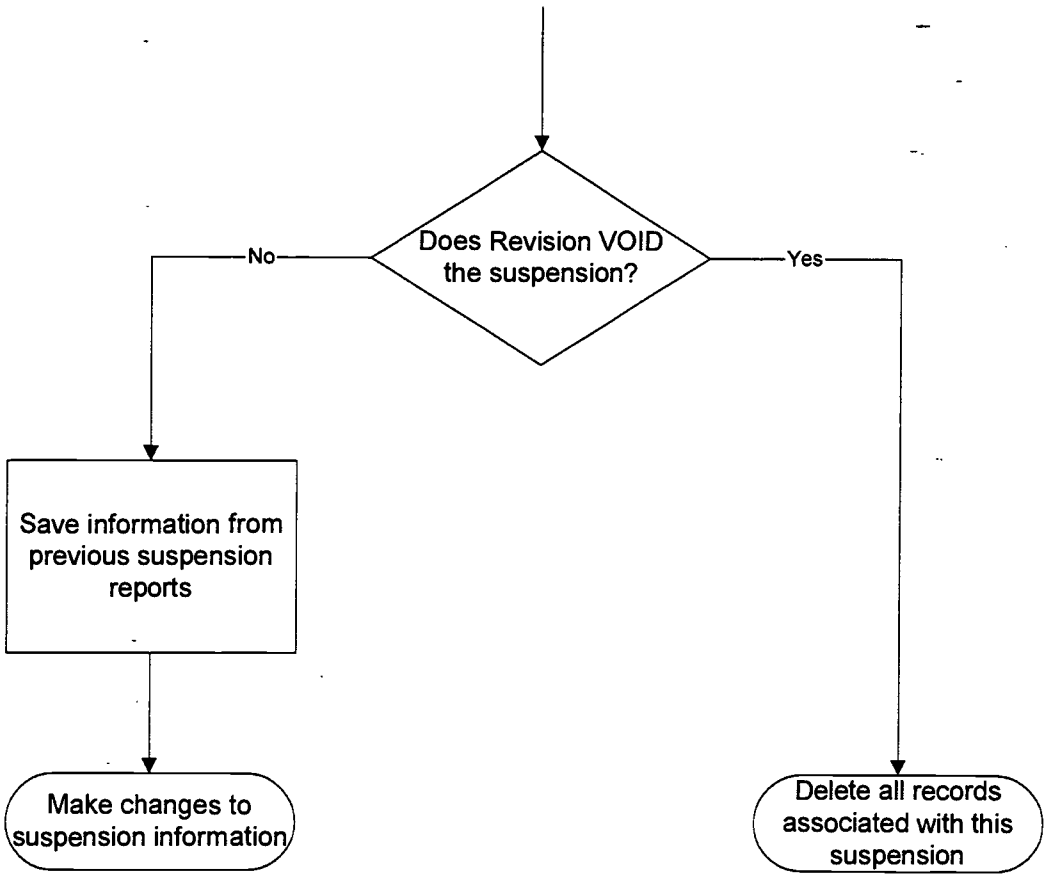
Request for Temporary Placement



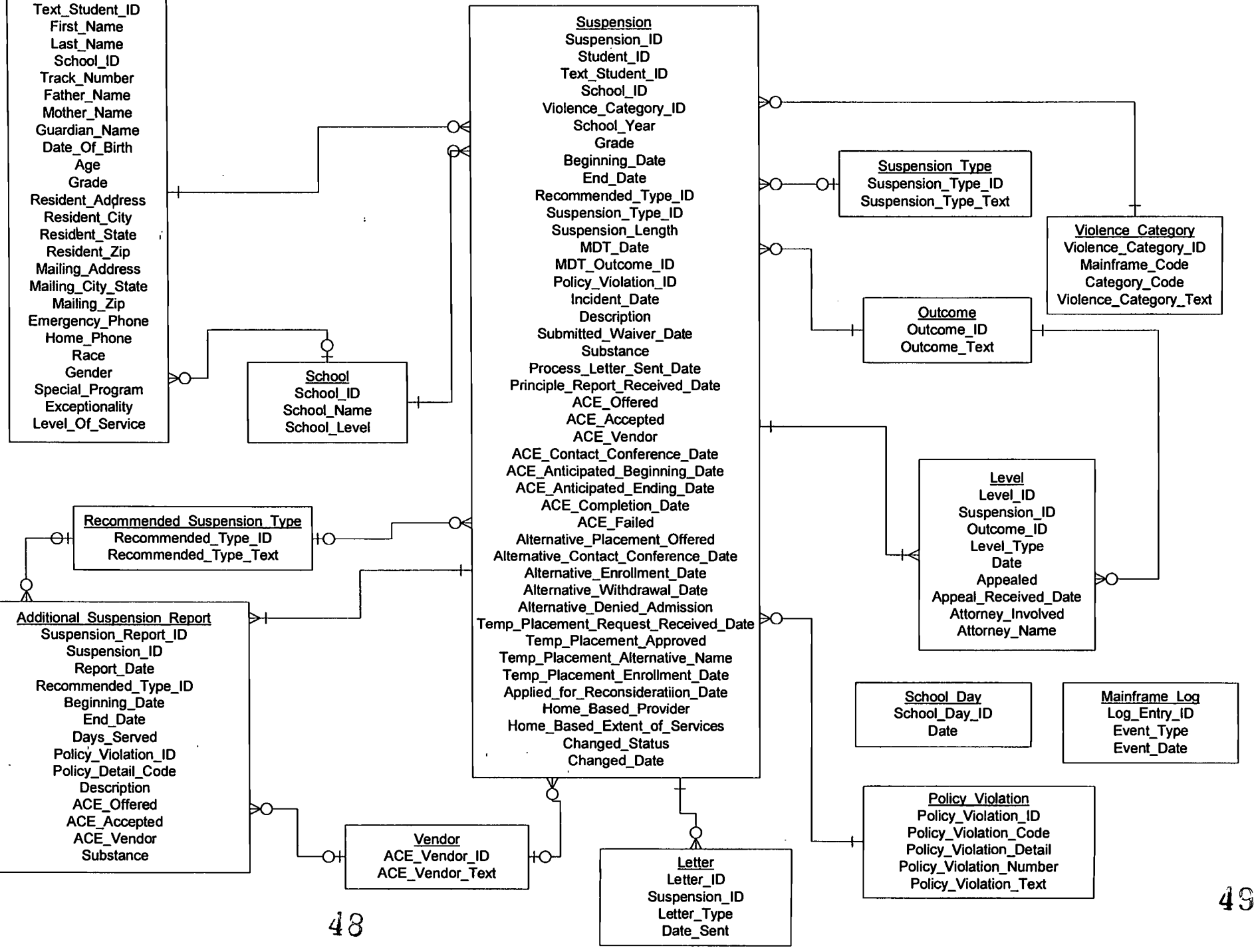
Apply for Reconsideration Process



Receive Principal's Revision Process



Data Model for Wake County Suspensions



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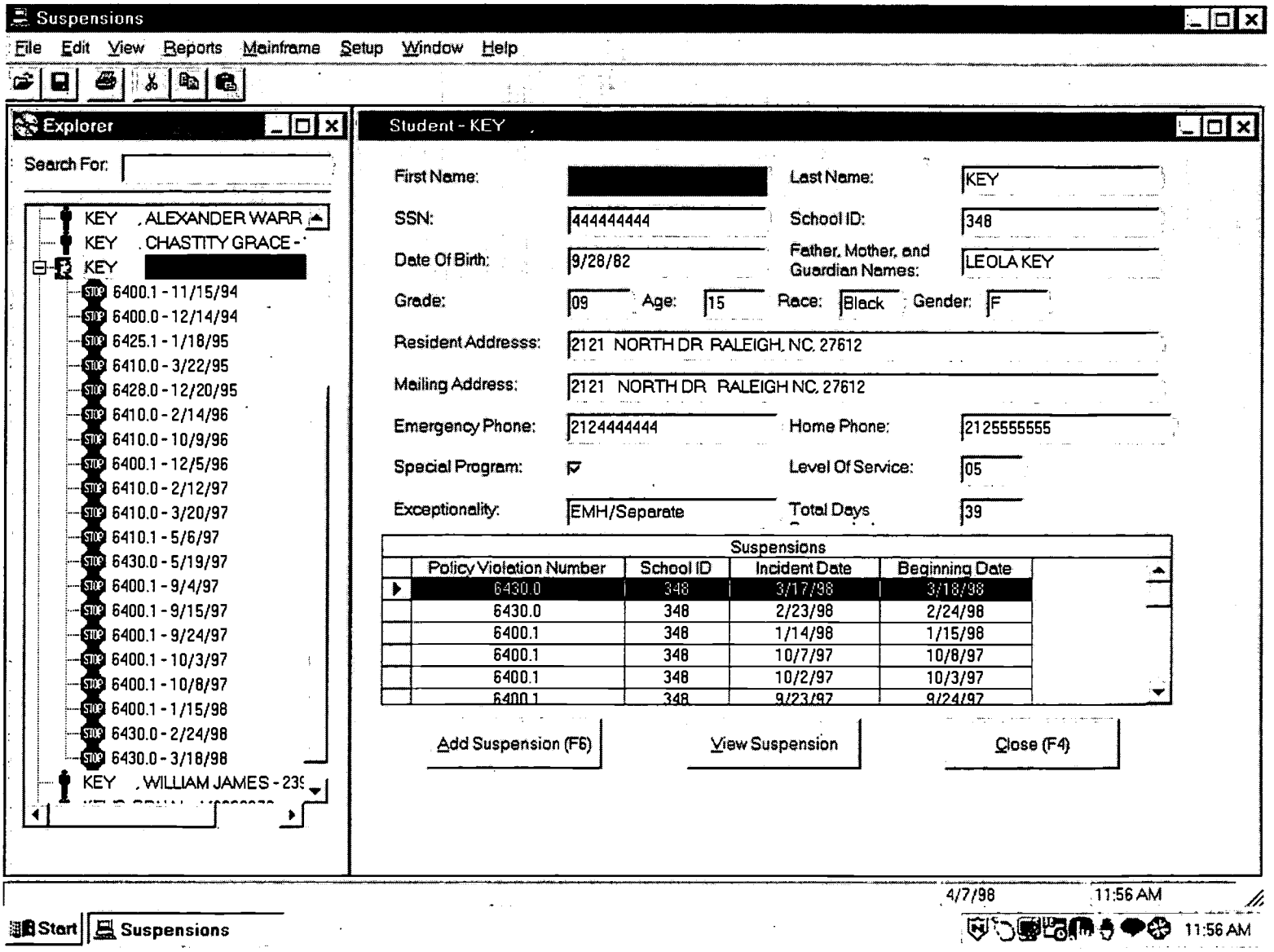

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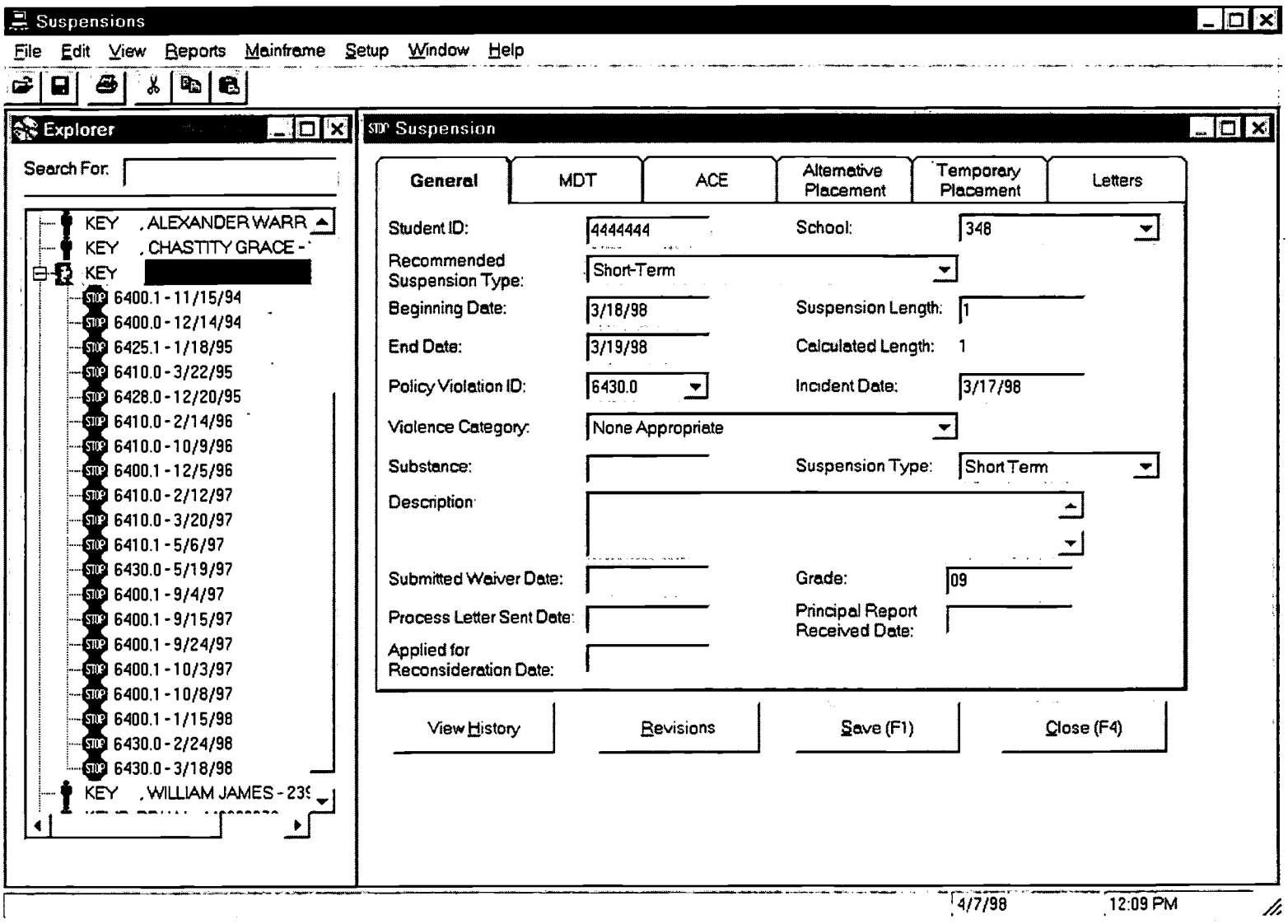

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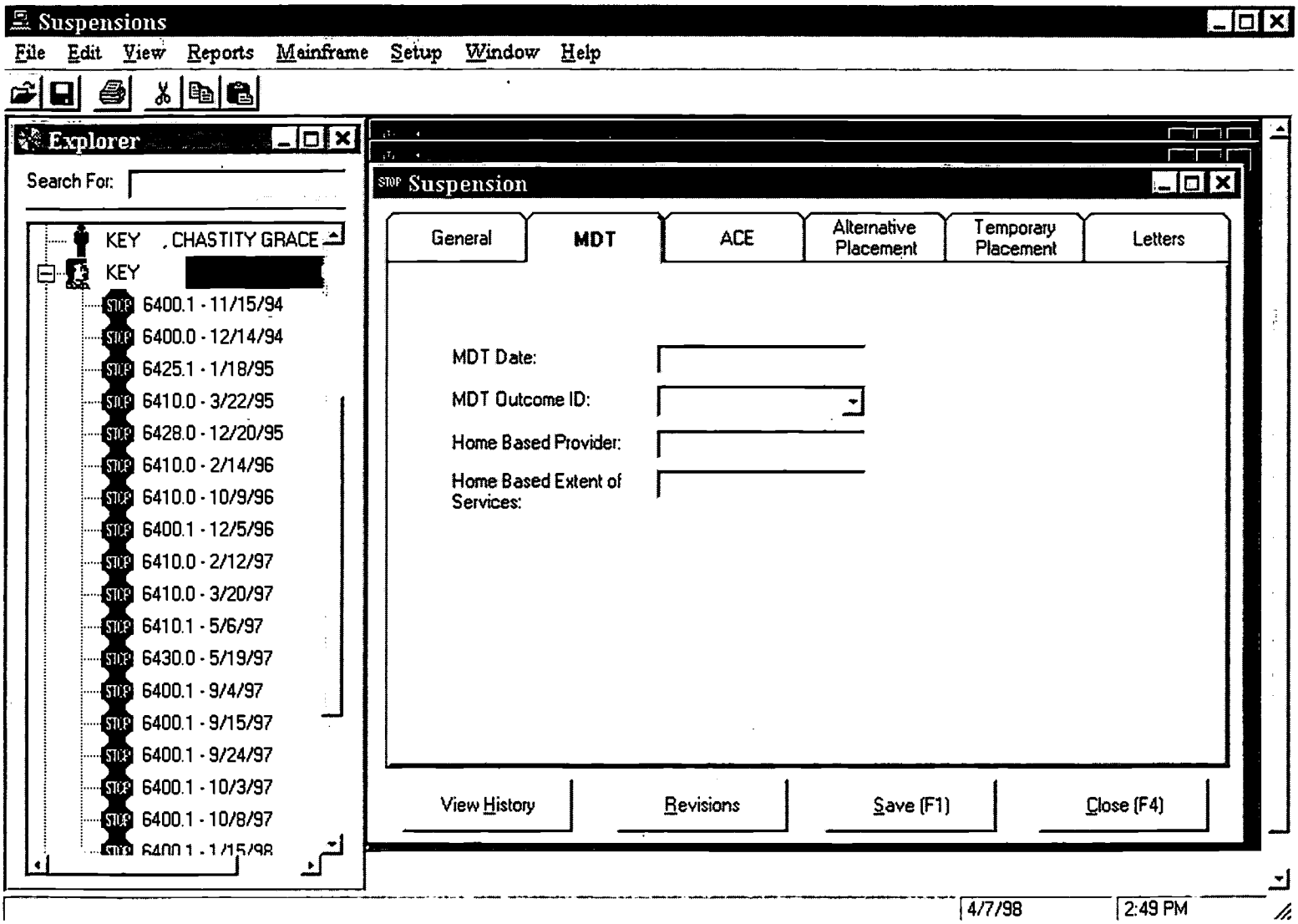

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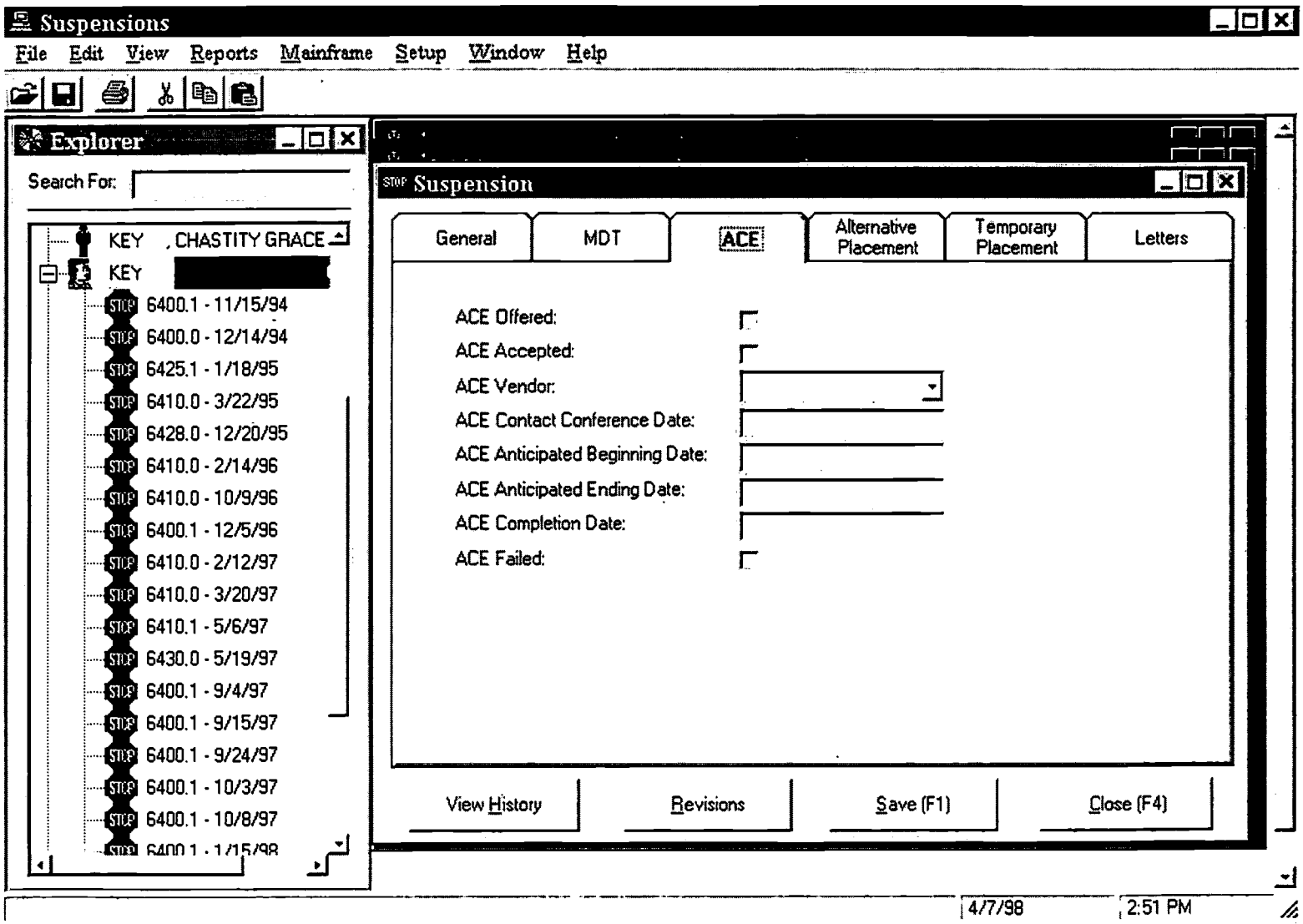

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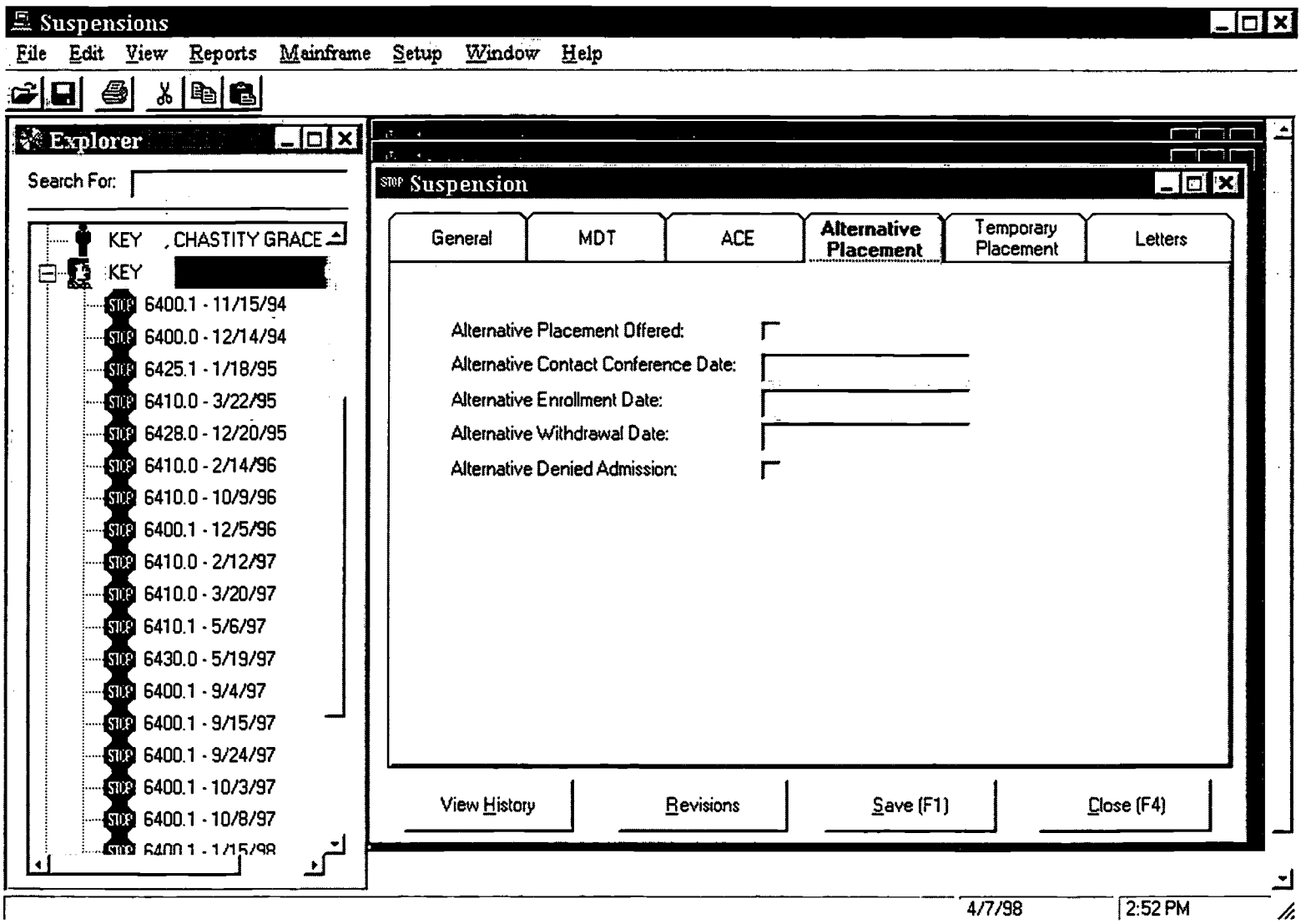

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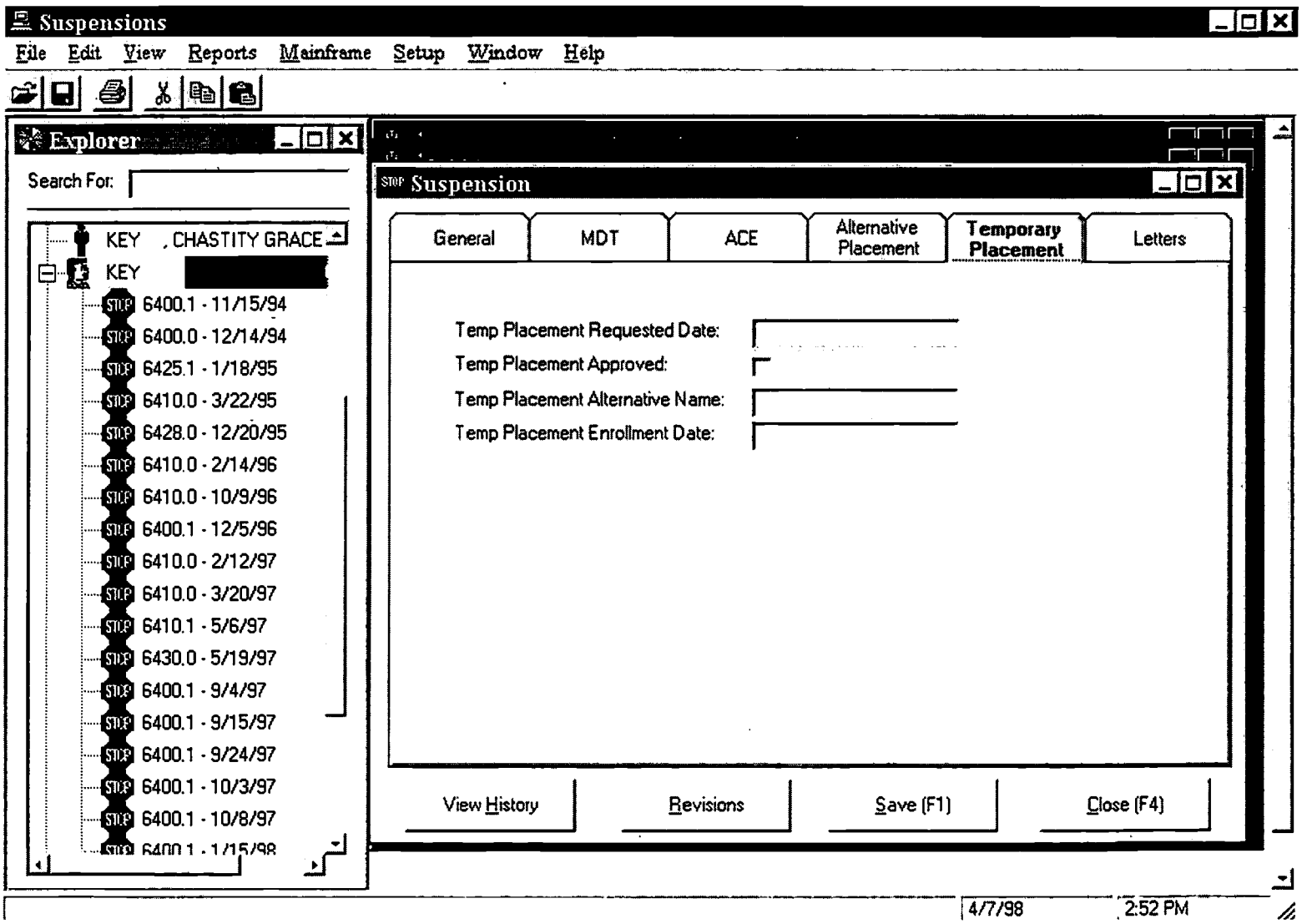

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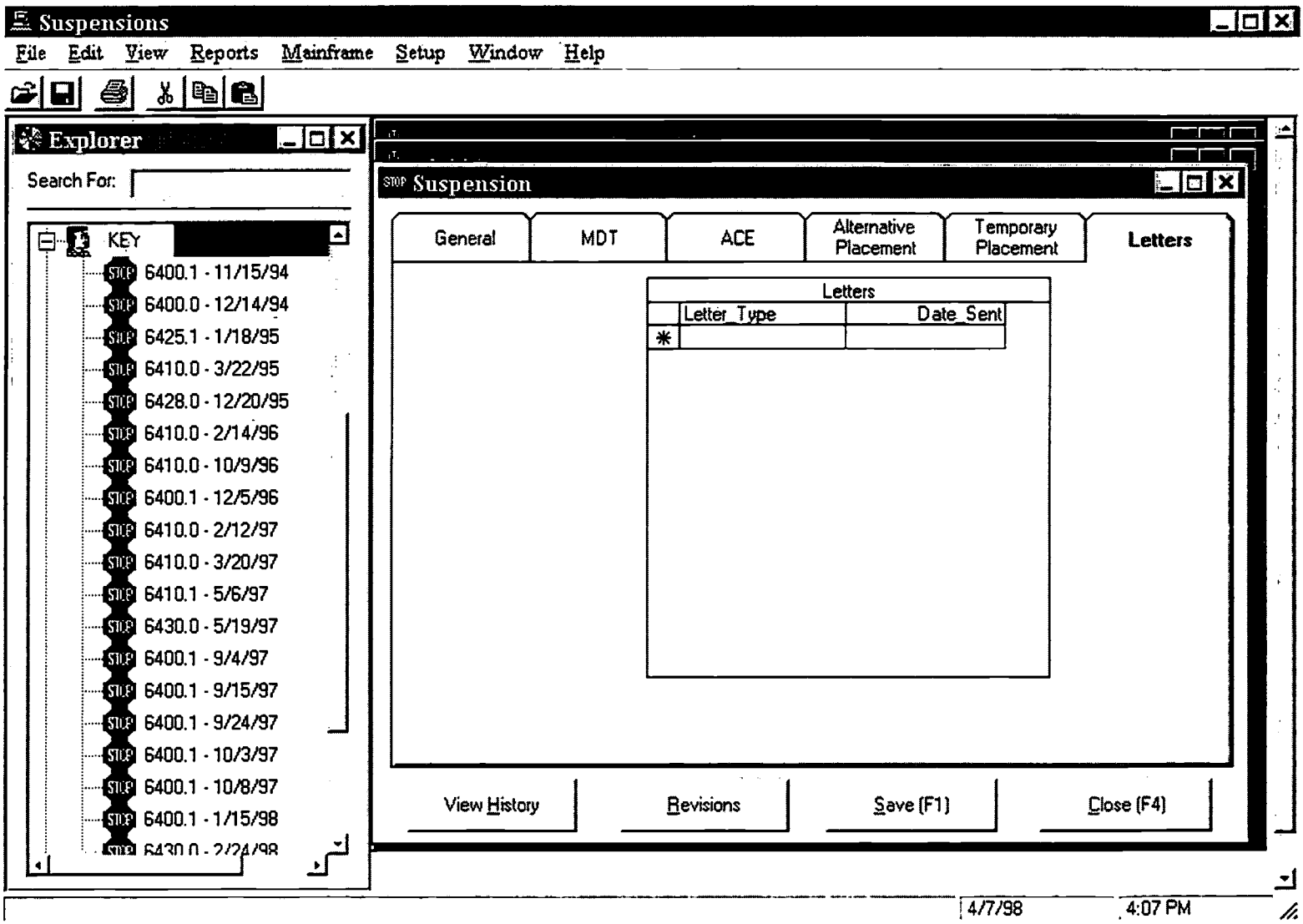

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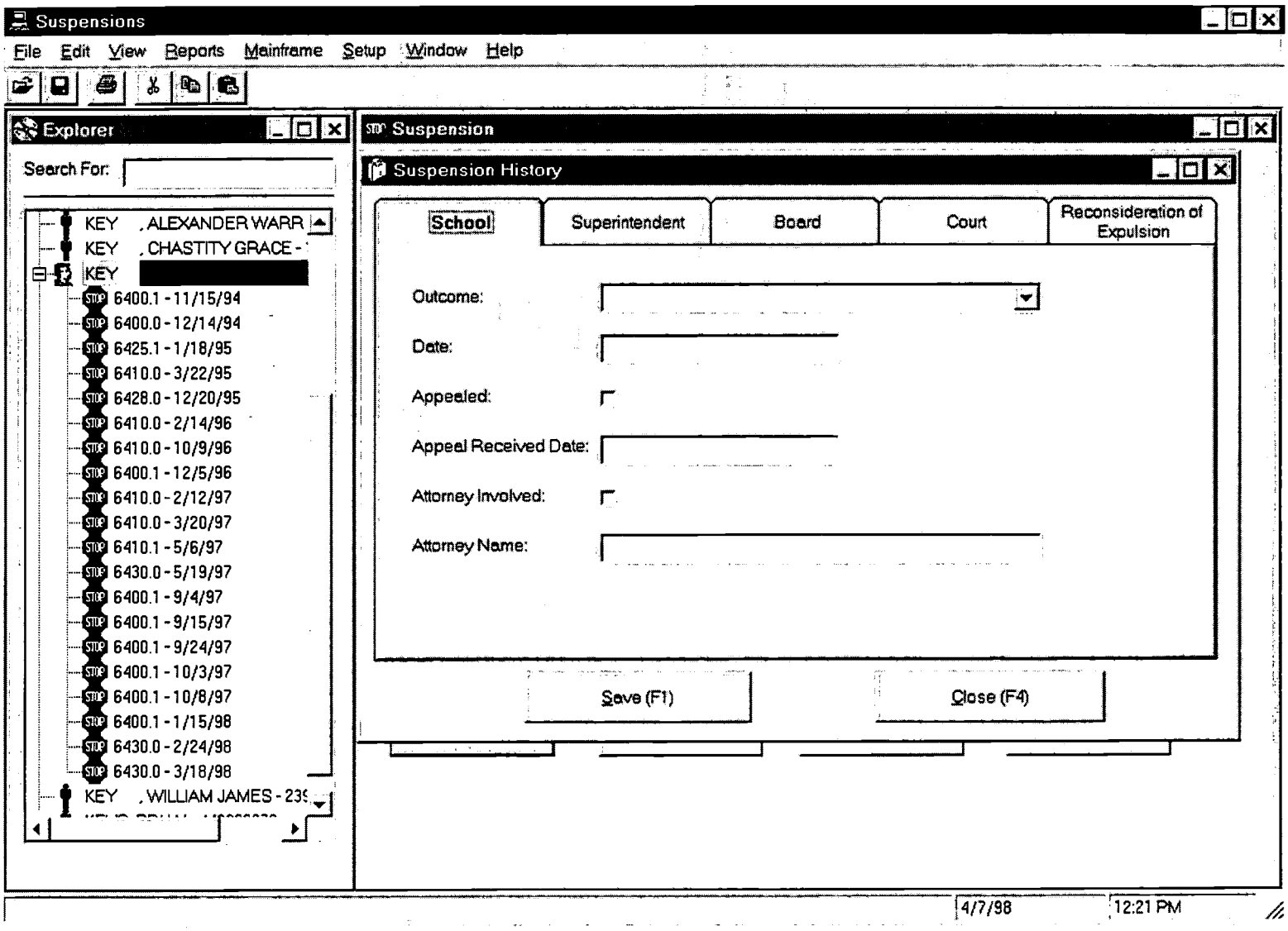

WAKE COUNTY PUBLIC SCHOOL SYSTEM
NOTICE OF STUDENT SUSPENSION FROM SCHOOL

TO THE PARENT(S): This notice is to inform you officially that your child has been suspended from school for the reason(s) explained below. Please telephone the principal at _____ _____ to arrange a conference before the student returns to school. If you believe the principal has exceeded his/her authority as provided in G.S. 115C-391, you and/or your child may appeal the suspension through the Student Grievance Procedure (school board Policy 6520) or Due Process Procedures (school board Policy 6530) as appropriate.

Student's Name_____ School _____ School # _____

ID# _____ Date of Birth _____ Age _____ Grade _____

Parent's/Guardian's Name _____ Work Telephone _____

Address _____ Home Telephone _____

Type of suspension: _____ **Emergency** _____ **Short-Term** _____ **Short-Term with**
- ❑ **Recommendation for long-term****
- ❑ **Recommendation for 365 days****
- ❑ **Recommendation for expulsion****

Beginning date: _____ Number of school days suspended on this occasion: _____

May return to school on: _____ Number of days of suspension already served this year: _____

** If long-term for the remainder of school year, 365 days, or expulsion is recommended, a copy of the Due Process Procedures must be enclosed with this notice. Unless otherwise determined by the superintendent, **a student who is given short-term with recommendation for long-term, 365 days, or expulsion, shall remain on suspension until resolution of any requested appeal.**

This student is charged with violating school board Policy (or Policies): _____ on (incident's date) _____

Policy Violation 6429.1,2 or 3: Alcohol ❑ Drug ❑ Other ❑ 6429.2 offered ACE ❑ Accepted/Denied date:_____ ❑ FIND ❑ Keys to Recovery ❑ Other

Describe the nature of the offense(may be continued on additional paper as needed):

_____

_____

_____

_____

PLEASE BE AWARE that pursuant to Policy 6440: Any student under suspension from school is trespassing if he/she appears on the property of any school during the suspension period without the express permission of the principal. Trespassers may be prosecuted if they do not leave when instructed to do so.

FOR SPECIAL PROGRAMS STUDENTS ONLY:

Is this student currently enrolled in a special program? _____ yes _____ no Exceptionality: _____ Level of Service: _____

If this suspension is a recurring short-term or a recommendation for a long-term suspension, please forward a copy of the results of the Multidisciplinary Team meeting which will meet/has met on (date) _____ to (1) the student due process officer and to (2) special programs' lead specialist for compliance CAUSALITY ❑ NO CAUSALITY ❑

TENTH DAY – LONG-TERM:_____ **NOTE: Principal should sign all recommendations for long-term, 365-day suspensions and expulsions.**

_____

Signature of Principal or Designee Date

On the first day of suspension, the principal will:

(1) complete this report including the SDPI-required information on the reverse side,
(2) send THE ORIGINAL of this report WITH THE REVERSE SIDE COMPLETED to the student due process officer,
(3) retain one copy for the school file, and
(4) mail or give a copy of this side of the form to the student to take to his/her parents.

** **If a recommendation for long-term, 365 days, or expulsion is made, this along with the due process procedures brochure must be mailed to the parents by certified mail, return receipt requested.**

FORM 1716 (Revised 8/1/97)

Wake County Public Schools
Long Term Suspension Recommendations

ID	Full	School	Grade	Policy	Substance	Begin Date	Len	End Date	Exceptionality	MDT	Outcome	SB	Outcome	Supt	Outcome	Board	Outcome
052	LUXE	East Wa	11	6420.1		03/05/98	13	03/18/98	LD/Regular	03/09/98	Causality						
111	SING	Garner	10	6000.0		03/05/98	13	03/18/98									
0	,	Wake F		6429.2	Alcohol	03/05/98	13	03/18/98				3/11/98	Upheld				
0	,	Southea		6429.1	Drugs	03/05/98	33	04/07/98				3/12/98	Upheld				
410	COX,	Carroll	08	6425.2		03/05/98	13	03/18/98									
0	,	Wake F		6429.2	Alcohol	03/05/98	13	03/18/98									
514	GILC	Carroll	08	6425.2		03/05/98	13	03/18/98				3/16/98	Upheld				
0	,	Wake F		6429.2	Alcohol	03/05/98	13	03/18/98									
340	VAC	East Wa	10	6420.1		03/05/98	14	03/19/98	BEH/Separate	03/06/98	No Causality						
0	,	Southea		6429.1	Drugs	03/05/98	34	04/09/98									
0	,	Southea		6429.2	Drugs	03/05/98	34	04/09/98									
0	,	Wake F		6429.2	Alcohol	03/05/98	13	03/18/98									
0	,	Southea		6429.1	Drugs	03/05/98	34	04/09/98									
0	,	Southea		6429.2	Drugs	03/05/98	34	04/09/98									
0	,	Wake F		6429.2	Drugs	03/04/98	13	03/17/98									
643	DUN	Garner	09	6000.0		03/04/98	13	03/17/98									
028	HINT	Garner	09	6000.0		03/04/98	13	03/17/98									
099	MAT	Fuquay-	09	6400.1		03/04/98	13	03/17/98									
0	,	Southea		6429.2	Drugs	03/04/98	35	04/08/98									
0	,	Southea		6429.3	Drugs	03/04/98	35	04/08/98									
0	,	Southea		6429.1	Drugs	03/04/98	35	04/08/98									
244	JOH	Leesville	09	6429.1	Drugs	03/03/98	13	03/16/98	AG/Language Arts								
192	HOL	Leesville	11	6429.1	Drugs	03/03/98	13	03/16/98									
402	HAR	Enloe Hi	09	6425.2		03/03/98	9	03/12/98	LD/Separate	03/04/98	Causality						
0	,	Zebulon		6450.3		03/03/98	13	03/16/98									
0	,	North G		6425.3		03/02/98	4	03/06/98		03/05/98	Causality						
192	MCC	Carroll	07	6425.2		03/02/98	11	03/13/98				3/16/98	Upheld				
0	,	West Ca		6425.2		03/02/98	11	03/13/98				3/10/98	Upheld				
117	JONE	Carnage	07	6420.1		03/02/98	11	03/13/98				3/12/98	Upheld				

Wake County Public Schools
Suspension History for KEY

	Policy	Policy Description	Start	Len	End	Recommended	Sch	Description	MDT
1	6430.0	TOBACCO	03/18/98	1	03/19/98	Short-Term	Bro		
2	6430.0	TOBACCO	02/24/98	2	02/27/98	Short-Term	Bro		
3	6400.1	ADMINISTRATORS DIRECTIONS	01/15/98	1	01/20/98	Short-Term	Bro		
4	6400.1	ADMINISTRATORS DIRECTIONS	10/08/97	2	10/10/97	Short-Term	Bro		
5	6400.1	ADMINISTRATORS DIRECTIONS	10/03/97	1	10/04/97	Short-Term	Bro		
6	6400.1	ADMINISTRATORS DIRECTIONS	09/24/97	1	09/25/97	Short-Term	Bro		
7	6400.1	ADMINISTRATORS DIRECTIONS	09/15/97	1	09/16/97	Short-Term	Bro		
8	6400.1	ADMINISTRATORS DIRECTIONS	09/04/97	1	09/05/97	Short-Term	Bro		
9	6430.0	TOBACCO	05/19/97	3			Carr		
10	6410.1	DRESS	05/06/97	4			Carr		
11	6410.0	SELF-DISCIPLINE	03/20/97	2			Carr		
12	6410.0	SELF-DISCIPLINE	02/12/97	2			Carr		
13	6400.1	ADMINISTRATORS DIRECTIONS	12/05/96	3			Carr		
14	6410.0	SELF-DISCIPLINE	10/09/96	3			Carr		
15	6410.0	SELF-DISCIPLINE	02/14/96	3			Carr		
16	6428.0	THEFT OR PROPERTY DAMAGE	12/20/95	2			Carr		
17	6410.0	SELF-DISCIPLINE	03/22/95	1			Ligo		
18	6425.1	FIGHTING	01/18/95	3			Ligo		
19	6400.0	STUDENT BEHAVIOR	12/14/94	2			Ligo		
20	6400.1	ADMINISTRATORS DIRECTIONS	11/15/94	1			Ligo		

EC 306402

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	E-Mail Address: arcs@mindspring.com Date: 4-13-98

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